Railway Age Gazette

PUBLISHED EVERY FRIDAY AND DAILY EIGHT TIMES IN JUNE, BY THE
SIMMONS-BOARDMAN PUBLISHING COMPANY,
WOOLWORTH BUILDING, NEW YORK.

CHICAGO: Transportation Bldg. CLEVELAND: Citizens' Bldg.
LONDON: Queen Anne's Chambers, Westminster.

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Subscriptions, including 52 regular weekly issues and special daily editions published from time to time in New York, or in places other than New York, payable in advance and postage free:

United States and Mexico.....$5.00
Canada 6.00
Foreign Countries (excepting daily editions)..... 8.00
Single Copies .....15 cents each

Engineering and Maintenance of Way Edition and four Maintenance of Way Convention Daily issues, North America, $1.00; foreign, $2.00.

Entered at the Post Office at New York, N. Y., as mail matter of the second class.

WE GUARANTEE, that of this issue 8,150 copies were printed; that of those 8,150 copies, 6,694 were mailed to regular paid subscribers and 345 were provided for counter and news companies' sales; that the total copies printed this year to date were 259,459—an average of 8,648 copies a week.

VOLUME 55. JULY 25, 1913. NUMBER 4.

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*Illustrated.

MR. MELLEN, in resigning from the New York, New Haven & Hartford, acted in a way consistent with his entire record as a railroad president. Charles S. Mellen is without doubt one of the most remarkable men who have ever been at the head of a great American railroad system. Entrusted with great power and burdened with a tremendous responsibility, Mr. Mellen took counsel with none; he planned out his own course, and after once deciding that it was the proper course, he followed it with an undeviating, uncompromising directness that has seldom been equaled outside, possibly, of military history. There have been strong arbitrary railroad presidents before Mr. Mellen, most of them of what is nowadays spoken of as the old school; in the majority of cases they have been owners as well as officers, but in the history of each one of them may be found instances of compromise, of acceptance of advice and of conciliation. Not so with Mr. Mellen's administration of the New Haven. Furthermore, when he finally became convinced that the New Haven's affairs could be better managed by some one else, his decision was given to his board of directors as absolute and final. Probably there is no better comment on Mr. Mellen's character and strength than the manner of the acceptance of his resignation by a board of directors which includes many of the strongest and most successful men in American business. In resigning Mr. Mellen stated his unalterable belief that his policies had been right and that time would prove them right, and accepted the fact that his manner of carrying them out would probably make them more difficult of accomplishment than would the manner of some less arbitrary and rigid successor.

WHILE railway executives, lawyers and others are pondering on the effects of the recent decisions of the Supreme Court in the state rate cases, there is one very practical aspect of the case, which for some time to come will overshadow all broader questions relating to the decision in the minds of passenger officials and rate men whose duty it is to put the court's mandate into effect. Although not exactly a part of the case, one of its most important direct effects is to bring the railways face to face with the stupendous problem of readjusting their interstate fares to conform to the provision of the long and short haul section of the Mann-Elkins law, which prohibits the charging of through interstate rates higher than the combination of intermediates. This must be accomplished, according to the Interstate Commerce Commission's rulings, by May 1, 1914, and railway passenger officers are wondering where they are going to find rate clerks enough even to make an impression on the job in that length of time. One of the practical realities of state regulation, which the Supreme Court did not feel called upon to consider deeply, is that the reduction of all passenger rates in Wisconsin, for example, involves interstate rates from the Atlantic to the Pacific. While the long and short haul clause does not apply to state rates, these of course affect the local interstate rates on which are based the long distance through rates between all parts of a broad nation, and apparently they have all to be checked against all possible combinations of locals. It is true that the over-confidence of the railways that the Supreme Court would knock out the state rates is largely responsible for the fact that they have the entire task before them now. The law went into effect July 1, 1910, and the roads have delayed action under extension of time granted by the commission, hoping that the state rates would be defeated. Many interstate fares have already been lowered by state legislation, particularly rates to points near state borders and rates based thereon, but many more rates will now have to be reduced which have not yet been readjusted. Aside from the vast labor and expense of such a complex revision the reduction of interstate fares will naturally have an important effect, which is now almost beyond estimate on passenger revenue.

AT the annual conventions of the firemen's and the enginemen's brotherhoods recently held in Chicago and Washington, the long-standing differences between the two organizations, concerning their relative standing in the conduct of negotiations with railroad companies, has been settled; a development which will be a decided relief to many railroad officers. This action, in effect, means that the brotherhoods as a whole have decided to follow the sensible course which has long prevailed on the New York Central, where the general committees have had a thorough understanding with the management of the road which has

worked to the satisfaction of both sides, and without friction. In brief, this arrangement is that in questions concerning wages the management shall deal with only one committee for each class, while in the matter of grievances this rule is not insisted on. On wages there is one committee for enginemen and one for firemen. For the enginemen the committee is composed, of course, of members of the enginemen's brotherhood. This committee acts in the interest of all enginemen, whether they be members of the enginemen's brotherhood or the firemen's, or if no brotherhood. For the firemen the committee is dominated, naturally by the firemen's brotherhood. The agreement consists of fifteen articles. The principal one is article No. 1, in which it is agreed that the right to make and interpret contracts, rules, rates and working agreements for locomotive engineers shall belong to the B. L. E. and for firemen and hostlers to the firemen's brotherhood. The rights of any engineer, fireman or hostler to have the regular committee of his organization represent him in case of a grievance is conceded. [That is to say, an engineman may have for his advocate a committee of the firemen's brotherhood if that is the organization to which he belongs; or, as an officer of the New York Central puts it, a man who is in trouble may get help wherever he can. His advocate may be a lawyer, a priest, a shoemaker, or simply his "next friend."] Elaborate provisions are made in this agreement for joint action, and, conditionally, for temporary joint committees; and the procedure in case of disagreement or deadlock is carefully defined. Men may be members of both brotherhoods, on paying dues, etc., but men belonging to both shall not serve on committees. If the B. L. E. should order a strike it would not require its members who are firing to quit their positions; and vice versa. Article No. 10 contains elaborate provisions about promotion and seniority, apparently an outline for use in making demands on employers. These details, however, are of immediate interest only to members of the brotherhoods. To railroad officers the significant feature is the agreement to bury the hatchet. Assuming that the local officers of the unions will carry out this idea in the spirit in which it has been adopted in the conventions as, no doubt, they will, a prolific source of irritation will be done away with.

THE PERSONNEL OF THE MEDIATION BOARD.

PRESIDENT WILSON has selected William Lee Chambers as commissioner of the board of conciliation and mediation provided for by the Newlands bill, and Judge Martin A. Knapp as one of the two other members of the board. Judge Chambers was the third and deciding member of the arbitration board which heard the firemen's case for higher wages, and it is, of course, natural to turn to his record in this proceeding to form a judgment of the man. In it he showed himself honest, generous, warm-hearted and thoroughly a man to be respected; furthermore he showed tact and was in a way the embodiment of conciliation.

The duties of the three men who form the board of arbitration are of very great importance, but they do not, it must be remembered, include the final arbitration proceedings themselves. It is the duty of this mediation board, in the first place, to bring the two sides of the controversy together on the points which are to be submitted to arbitration. This in itself is a delicate task and one which Judge Chambers is eminently fitted for. After a case has been prepared for arbitration, each side to the controversy is to select two men, and these four men are to try to select two impartial men to complete the board of six, whose duties it will be to actually hear the two sides to the controversy and to render the final decision. Needless to say, it is hardly within the bounds of possibility that the four men who will be selected by the employees and the railroad companies in the pending trainmen's controversy will be able to agree on two other men to complete the board. It will thus devolve on Judge Chambers and his two associates to select the two impartial members of the commission which will pass on the trainmen's demands. In this will lie the greatest opportunity and the greatest responsibility of the mediation board. In the selection of these two men there will be required courage and judgment of a very high order. Tact, conciliation, compromise—all those things that will be highly fitting and proper in the preparation of getting the two sides to the controversy together—would be, in the final selection of the two impartial arbitrators, wholly out of place and tantamount to failure to recognize the solemn responsibility which has been placed on the mediation board.

In passing upon the firemen's contentions Judge Chambers, as we have said, showed tack, uprightness and fairness. On the other hand, it struck an observer, who followed the proceedings with care, that Judge Chambers' mind was made up, at least in regard to the attitude which he would take, before the hearings took place at all. His questions during these hearings appeared to indicate that during the time he was presiding his mind was following a certain course on which he had decided previous to coming to the proceedings. As certain points were brought up in the testimony they apparently coincided with or went against certain opinions arrived at in the natural course of Judge Chambers' reasonings, and when this occurred it called forth questions and at times an analysis of either the railroads' or the employees' contentions, but did not, apparently, materially change the course of Judge Chambers' thoughts. In other words, Judge Chambers apparently reasoned *a priori* rather than deductively.

It is earnestly to be hoped that the mediation board, in selecting two men to pass on the trainmen's controversy, will succeed in finding two strong, uncompromising, honest men who will face the situation that will be presented to them, and who will finally decide the very momentous question which they will have to decide purely on the merits of the case itself as it is presented to them and in the light of principle, not of compromise.

From the trainmen's own point of view and from the point of view of the future good of the brotherhoods, it is of the greatest importance first, that in this demand of the trainmen, the case for both sides be presented fully and well; second, that it be analyzed and passed on by men capable of uncompromising analysis. In this way only can there be put before the public, the fellow-workers of the brotherhoods, and the railroad managers, the merits of the controversies stripped of all side issues of prejudice and of selfishness. It must be remembered that the brotherhoods are only between 10 and 15 per cent. of the total number of railroad employees. The arbitrators who are to finally pass on the trainmen's demands should have presented to them not only the side of the managers and the side of this small minority of employees, but also the side of the great majority of railroad employees from whom organized labor is now attempting to snatch every dollar that the railroads can put into increased wages.

There is an opportunity presented here for the railroad managers to take a broader stand than they have ever heretofore taken in any wage controversy with organized labor and to present not only the narrow hand-to-mouth sort of arguments that have so often been presented in the past, but to present the whole serious case with its far-reaching effect on *railroad labor that is not organized,* and on all relations between employer and employed, as well as the immediate comparatively narrow interests which the managers represent.

The profound study of all sides of a question that was made by the Hadley commission into the possibilities of the regulation of the issuance of securities is the kind of investigation that should be made in the wage controversy, and there were two men at least on that commission, President Hadley and Commissioner Meyer, who are the type of men who ought to be selected by the mediation board to act as the impartial arbitrators whom they will be called on to select.

THE HUMAN ELEMENT IN INDUSTRIAL MANAGEMENT.

ONE of the sessions of the joint meeting of the Verein Deutscher Ingenieure and the American Society of Mechanical Engineers, which was held in Leipzig, Germany, the latter part of June, was given over to a consideration of industrial management. Two papers were presented, one by James Mapes Dodge, of Philadelphia, and the other by Professor G. Schlesinger, of Germany. Professor Schlesinger gave an analysis of industrial management under the title of "Practical and Scientific Management," using material which was very largely drawn from American sources. He directed attention, among other things, to the fact that the German people, who for centuries have been accustomed to obedience to superiors, to methodical instruction, to observing written reports of the fullest description and to compulsory service, should help Germany to quickly take full advantage of the results of scientific management and thus regain any temporary advantage which the Americans may have gained by the practical experiments along these lines which have been going on for a number of years.

Only three-tenths of one per cent. of the American workmen are now working under scientific management and the number will probably not increase very rapidly—at least, if we consider scientific management to mean the Taylor system—for the new movement has been exploited in such a way as to antagonize organized labor, and it will take a long time to overcome this prejudice. One of the fundamentals of the successful use of the Taylor system, and this was emphasized by Mr. Dodge, is intelligent co-operation between the employer and employee. To have such co-operation it is important that both parties cast aside their prejudices and study each other's conditions and interests carefully and with open minds. If this cannot be done, then any of the detail methods which are associated with the Taylor system are largely useless. Mr. Dodge has had as much experience with this system, from the viewpoint of the employer, as any one, and he frankly emphasized the fact that intelligent co-operation is the foundation of scientific management and that the employer and employee must have confidence in each other. It is worth while to quote the words with which he closed his address:

> "After these conditions are brought about, all else is easy, and simply calls for an expenditure of time, patience and a desire to aid and assist. The details of scientific management so far as methods of time-keeping, pay, time-study, and all that goes with it, are concerned, have been ably presented. It is sufficient to say that none of these details is absolutely essential. All may be modified, provided that in making the modification positive conflict with other details is not developed. All must be done with a broad understanding and with the spirit of absolute faith in the outcome, and confidence in the triumph of truth over error."

In commenting on the disadvantages of the Taylor system Professor Schlesinger mentioned the great difficulty of securing properly trained managers for installing and operating the new system. His specification for these men is as follows: "In order to procure a scientifically managed organization, engineers are required who are endowed with scientific minds and fully conversant with the methods of manufacture and their requirements today. Further, they are not only required to know theoretically the possibilities of work, but to be so clever and skillful practically, that they can even actively co-operate and remedy errors, and finally become such keen observers of human nature as to win the confidence of their workmen." It would be extremely difficult to find sufficient men of this type to take charge of a few of the industries; but when the extent of our American manufacturing and commercial industries is considered, it is readily apparent that Dean Gay, the head of the Graduate School of Business Administration at Harvard, was not far wrong when he estimated a few years ago that it would require two generations for the principles of scientific management to become at all generally accepted or the methods to be in vogue in any large part of the industrial field.

After all, then, the problem is almost entirely one of men—the developing of men who are big enough not only to understand and appreciate the men under them and know how to handle them, but who, with the aid of all that science and practice combined can place at their disposal, will lead the men to eliminate all wasteful and inefficient efforts, and thus secure a maximum result with a minimum of effort.

A couple of years ago, when the enthusiastic exponents of scientific management called attention to the shortcomings of railways as they saw them, the emphasis was placed on methods. Today they are beginning to see that while methods are important, they are not nearly so much so as the human element in the problem. It must be admitted, however, that while the enthusiasts and the so-called efficiency engineers placed this emphasis wrongly, Frederick W. Taylor did not himself overlook its importance. In defining the philosophy of scientific management he summed it up in the following four principles:

First: The development of a science in place of "rule of thumb" for each element of the work.

Second: The scientific selection and training of the workman.

Third: The bringing of science and the scientifically trained workman together through the co-operation of the management with the man.

Fourth: An almost equal division of the work and the responsibility between the management and the workmen, the management taking over all work for which they are better fitted than the workmen, while in the past almost all of the work, and the greater part of the responsibility, were thrown upon the workmen.

It will be noted that the second and third principles cover this problem of the human element. More and more we shall have to select our workmen and assign them to the work for which they are best fitted with the help of scientific investigation and study of their individual characteristics. After all, the problem of industrial efficiency will have to be solved, as it has in the past, by the development of strong executives who thoroughly understand the selection, training and handling of men, and who, in addition to this, will use all that science and practice can place at their disposal in developing methods to suit each special case, which will result in a maximum of efficiency with a minimum expenditure of energy.

NEW BOOKS.

Civil Engineers' Pocket-Book. By Albert I. Frye. Size, 4 in. x 7 in.; 1,611 pages; flexible leather binding. Published by D. Van Nostrand Co., New York. Price, $5.

The latest "Civil Engineers' Pocket-Book" is larger than any that have preceded it. The type used is smaller than the average of such books and in spite of the economy of space throughout, the number of pages is greater than in any of the earlier books. A thin grade of paper is used, but the volume is still two inches thick, making it questionable whether the name "pocket-book" can still be applied to such volumes, which, through the development of the profession, have grown to a size that makes them available only for desk and office use. The increased size of Frye's pocket-book is occasioned rather by the attempt to go into greater detail in each subject than by any broadening of the field which is treated. In general, the division of the book, the tables and data included, are very similar to the volumes already in use. The most noticeable feature of the book is the very large number of references to current literature on the subjects treated. At the close of each section a list of excerpts and references is given from which the user of the book can select a number of descriptions which go into much more detail than is possible in a pocket-book. The book has a very complete table of contents and an index to facilitate ready reference. A glossary of technical terms is also included in the book, and in addition there are a large number of illustrations, also drawings. In general, the typography and makeup are commendable.

Letters to the Editor.

THE STOKER VS. POWDERED FUEL FOR LOCOMOTIVES.

New York, July 9, 1913.

To the Editor of the Railway Age Gazette:

I have read with considerable interest the article entitled "Powdered Fuel for Locomotives," signed by Walter D. Wood, which appeared on page 13 of your issue of July 4, and also your editorial comment on the same subject.

I wish to take exception to the statement of Mr. Wood that we have about come to a standstill in the development of our steam power. From the standpoint of a machine for hauling traffic, the locomotive has during the past ten years been improved to a greater extent than in any other like period since the first locomotive was built. The introduction of locomotives of greater weight and power, the introduction of superheaters, brick arches, stokers, and other devices, have permitted the production of locomotives having a hauling capacity which ten years ago would have been considered impossible. In view of the fact that some of the greatest improvements have been made within the past two or three years, there is no reason for believing that the development has come to a standstill, and there is on the other hand every reason to believe that marked additional improvements will be made. One of the greatest lines for improvement is undoubtedly in the firing of the locomotive. The present system of putting coal in a firebox with a shovel is very crude, and, from a theoretical standpoint, just about as near wrong as it could be done. As a consequence, the variation in the results secured by different firemen on the same road and on the same locomotive is from 25 to 35 per cent., or even greater. With the introduction of stokers and other improvements, this variation can be practically eliminated. The introduction of powdered fuel may be one of the solutions of this problem, but there are many serious difficulties in the way.

Mr. Wood makes the statement that: "Practically all of the biggest Mallets have, or have had, stokers of various types at some time or other, most of them having proved inadequate when the most trying conditions were imposed upon them." I wish to take exception to that statement. I know of only two or three cases where stokers have been removed from large Mallet locomotives because they proved inadequate, and at the present time over one hundred large Mallet locomotives are being successfully fired with stokers, and stokers are being applied to 30 or 40 additional locomotives of that type. The largest coal-fired Mallet locomotives in existence, having a tractive effort of 115,000 tons, are being successfully fired with stokers.

Mr. Wood makes the statement that the electrification of roads must come unless smoke is abolished—not partially, but entirely. This is certainly a very radical statement from a railroad man, as it is in line with the general persecution of railways which has been in vogue in this country for some years past. If railways are to be compelled to entirely eliminate smoke, why should not steamboats, factories, office buildings and residences be compelled to do the same thing? One proposition is just as unreasonable as the other. It is just as practicable to run all power plants with electric power, to heat all buildings with electricity, to heat all houses and do all cooking with electricity, as it is to run all railways by electric power; that is, at the present stage of the development of the electric art.

I have sat in a window and watched the smoke stacks of hotels, office buildings and manufactories belching forth clouds of black smoke continuously, while inspectors in the same city were perched in a line along the right-of-way of a railroad taking the numbers of locomotives which were producing only a fraction of the quantity of smoke produced by the stacks referred to, and arresting and fining the firemen and engineers for producing smoke, while no action whatever was taken regarding the other smoke producers. No reasonable man or body of men would for one moment maintain that this was just to the railroads, but it is what is being done from one end of this country to the other, and is one of the most serious of the many persecutions which the railways are experiencing at the hands of so-called legislators.

As stated above, it may be that powdered fuel will some day be successfully used for firing locomotives. As stated by Mr. Wood, it is being successfully used for firing cement kilns and heating furnaces. I looked into this subject to a considerable extent before I began work on my locomotive stoker and found that the difficulties in the way of a successful solution of the problem were so complex and so many that at that time I did not believe it advisable to take it up. That was six years ago, and since that time there have been some improvements in methods of handling powdered coal, but when compared with the entire problem these improvements are very small.

On the other hand, the problem of firing locomotives by means of a stoker has been solved. These machines are in daily and regular service on between four and five hundred locomotives, and are being applied at the rate of from fifty to seventy-five locomotives per month. The development of the stoker has reached the stage where it is possible to apply a machine, run the locomotive out of the shop, attach it to a train, and make a run over a division, the stoker doing a 100 per cent. job the first trip, and the locomotive developing its full capacity. This has been done not only with one machine, but with fifty or sixty of them in succession. The stoker today is just as reliable as the locomotive and can be depended upon to do its work. This machine is today doing everything which it is claimed that powdered fuel will do if it can be developed. This may sound like an exaggerated statement, but there are at least two hundred locomotives in regular, constant service which will, on investigation, prove that this is true.

The statement has been repeatedly made that a stoker-fired locomotive produces smoke. On the other hand it is claimed that oil-fired locomotives do not produce smoke. I have seen oil-fired locomotives producing clouds of smoke which were more dense and far beyond anything I have seen produced by coal-fired locomotives. Of course, the oil-fired locomotive was not being properly handled, and when the stoker is not properly handled, it does produce smoke. When properly handled and applied to a locomotive having a combustion chamber, brick arch and suitable appliances for admitting the proper amount of air to the fire-box, however, it runs practically without smoke.

With hand-fired locomotives there are firemen who hold the opinion that unless black smoke is rolling, the locomotive is not steaming properly. Stoker men have the opposite view and today the majority of stoker firemen, if they see smoke issuing from the stack, immediately know that they are not properly handling the machine and take measures to correct it. This is not a theory, but a fact and it can be seen at a number of different places on a number of different railroads.

It is claimed that powdered fuel will give a better control of the fire than is obtained with hand firing. This is true, but it will give no better control of the fire than is at the present time being given by stoker firing. The stoker can be shut off, which instantly stops any increase in the heat in the firebox. On the other hand, it can be instantly thrown to its full capacity, which will feed more coal than can possibly be required. Adjustment can be made quickly to any stage of coal consumption which may be required by the service being performed by the locomotive. The above results have been accomplished by taking well designed locomotives which are in regular service and attaching stokers to them, but without making any changes in the design of the locomotive. Mr. Wood admits that for the successful handling of powdered fuel the locomotive would have to be entirely redesigned.

The records of the patent office show that more patents have been issued for the burning of powdered fuel than for any other one type of device of this nature, but only a very small number of these patents have ever been developed to a practical use.

Mr. Wood does not mention one of the most serious difficulties in the way of firing locomotives with powdered fuel, and that is the explosive nature* of the material to be used. All of the information which I have been able to obtain goes to show that this material is fully as explosive as gunpowder and, owing to its very light weight, is even more difficult to handle. It is hardly to be conceived that any one would assume the moral responsibility for placing on the tender of a passenger train eight or ten tons of any material of an explosive nature, and it is difficult to imagine a roundhouse containing 25 or 30 locomotives, each with a tank of explosive, and, in addition thereto, a system for storing and transferring two or three hundred tons a day of a material of this character.

It is, of course, impossible to say what can and what cannot be done, and it may be that some practical plan for doing this can be worked out, but I take the liberty of suggesting that if the large locomotive company referred to by Mr. Wood expects to successfully adapt powdered fuel to the firing of locomotives, it might be wise to add at least one, if not two, cyphers to the sum set aside for that purpose.

CLEMENT F. STREET.

FALLACY OF THE EQUATED-REVENUE COST UNIT.

NEW YORK, July 20, 1913.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

The article written by "A Student" in the *Age Gazette* for July 11, suggesting the use of a cost or efficiency unit applicable to both passenger and freight services, seems fallacious for the following reasons:

1. The revenue unit cannot be used to determine costs as between passenger and freight for any one road. This is admitted in the article. But the crucial problem in determining any kind of railway costs is the division of the primary accounts between the passenger and freight services. If this cannot be done, it is meaningless to assert that a "unit cost" may be found; for a unit which could not be applied to freight or passenger rates and mileage separately, but only to a combination of the two services, would be as useless to the rate maker as to the railway manager.

2. Even though the object were to make a general comparison between different roads with respect to the efficiency of the roads as a whole, it is difficult to see how such a unit would be any more accurate than the operating ratio. It is well known that the operating ratio, though quite generally used, is merely a general index to the financial condition of a railroad, and cannot be relied on to furnish any test of efficiency. Any statistical unit of this nature is merely a greatest common divisor for a mass of detailed information. It should serve only as an introduction to a closer study of railroad accounts and operations. Any one familiar with railway operations knows the great range of operating and traffic conditions even within an I. C. C. group.

3. This suggests a third criticism, namely, that the unit which "A Student" proposes combines results taken from the group as a whole with those of any one railroad within the group—producing a statistical hybrid of questionable value. The contention that demand and supply operating on a large scale within the group tend to fix a just or even a normal rate, is untrue. If demand and supply operated with freedom in the field of transportation, there would be no occasion for the present demand of the eastern roads for a horizontal increase in freight rates. Values in transportation are more complicated than in any other field of economic activity, and abnormal conditions are more apt to exist there than elsewhere.

4. The fact that the reciprocals of freight and passenger group-rates are used as a means to place the freight and passenger service on a common basis, can accomplish nothing more than would a mere comparison of total mileage and total revenues for the respective services. It means merely that the figures are placed on a more convenient basis. It does not disclose any facts which are not shown in the basic figures.

5. It is impossible at present to find any one unit which will permit an accurate comparison of two railroads, or two I. C. C. groups, with regard to efficiency or in any other respect. The science of statistics is doubtless in its infancy. In order to determine the cost in transportation it is necessary to analyze both revenues and expenses, so that the constant inter-play of cause and effect between the two may be sufficiently revealed. Many attempts have been made to analyze expenses with reference to the character of the service—principally in connection with rate cases—but this is still in the experimental stage. Railway managers are too busy planning new development to take any serious interest in this problem; and not until the growth of traffic slackens will there be any great practical demand for its solution. On the other hand, a further separation of revenues might be undertaken at once with comparatively little cost. The I. C. C. reports at present contain no adequate analysis of traffic conditions or of the work done by the railways. Until such an analysis is made no complete information in regard to efficiency will be obtainable by the public. And it is more probable that standards of efficiency will not be worked out in a scientific spirit until railway managers become interested in the analysis of operating expenses.

OWEN ELY.

RELATIVE VALUE OF SERVICE FOR PASSENGERS AND FREIGHT.

NEW YORK, N. Y., July 15, 1913.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

The article by "Student" in your issue of July 11, on passenger and freight expenses, affords an illustration of the tendency of theorists to suppose that the truth is all on one side. As a matter of fact, the truth is a variable and the resultant of many forces whose relative strength is constantly changing. Observation will bear out the general statement that rates of any kind, whether for merchandise or services, are the resultant of three economic forces acting together and represented at any instant by, (1) value of service, (2) cost of service, and (3) ability to pay. These are the three-fold co-ordinates on which the rate curve may be plotted. Legal interference may prevent the natural play of these forces, but where unwisely applied it will be burst by the economic pressure.

When a new article or process is introduced, its rate or price is based largely on the value to the public of the new in comparison with the old way of doing the same thing. If a sufficient number of people to pay for the new process at a rate above its cost cannot be secured, the thing is unprofitable. The number of railroad receiverships is sufficient to show that value of service combined with ability to pay may fall below cost of service, and that cost of service so far from fixing rates is only a base line from which their profit ability is measured. It is equally wrong to go to the other extreme and say that value of service alone determines rates. When value of service and ability to pay push the rate very much above cost, the large traffic and profits excite competition, as in the case of an electric line competing with a steam road, and here the lower cost of the former makes possible the making of a lower rate, with the same profit. This lower rate decreases the value of the service in the eyes of the public and also attracts traffic which is able to pay the lower rate but not the higher. The high rate will then probably be lowered to a point slightly above cost or may be kept below it,

*Mr. Wood did not mention this in his original article, but covered it quite fully in the *Railway Age Gazette* of July 18, page 83. Mr. Street's letter was written, but not received, before this letter was published.—EDITOR.

as a matter of policy; the steam road expecting to make up for the loss by starving out the electric. What nearly always happens, however, is that the high rate line buys out the low, establishes a monopoly and restores the old rate, gaining added profit from the low cost line.

In regard to passenger and freight rates, it should be borne in mind that freight rates from the shipper's point of view are part of operating cost, and are pro-rated in the price of his goods to his customers, whereas passenger rates from the passenger's point of view are charged to general expenses, either pleasure or business, and cannot be passed on pro-rata. A man will pay 50 per cent. extra to travel from New York to Chicago in eighteen hours, who would not pay 50 per cent. extra to have his milk or bread shipped quickly. In the passenger trip the value of service plays a predominant part, whereas in the freight shipment the prospective sellers of the goods have so adjusted rates at a small margin above cost, that cost itself is the more important factor. Figuring passenger and freight expenses and rates on the same basis, is like trying to mix oil and water.

W. F. Turnbull.

WITH THE AUTHORITY GOES THE RESPONSIBILITY.

Washington, D. C., July 14, 1913.

To the Editor of the Railway Age Gazette:

The attacks upon the railroads have been so long continued and so persistent that, unconsciously, the odium has fastened itself upon the officers as individuals, until they are actually being deprived of their just voice in the government as tax payers and citizens. Any attempt upon their part to legitimately assert themselves in the politics of the community in which they reside, and in which they are as vitally interested as any other citizen, is almost invariably viewed with suspicion. They have equal rights with other citizens, and, as property owners, are equally interested in checking any tendency toward improper forms of government. These rights include the one of contributing individually to public opinion by criticism of existing conditions which they consider improper. Their criticism, if it can be encouraged, is more than likely to be of a high order, by reason of their training and conservatism due to constant pressure of heavy responsibility. Their criticism would uniformly be based upon calm review of facts, and not theories, and should carry great weight, because of the backbone of argument founded upon solid reason and logic.

The report of the Interstate Commerce Commission upon the recent regrettable accident in the train service of the New York, New Haven & Hartford has now been in the hands of railroad officers for sufficient time to have enabled them to carefully digest the decision and crystallize their opinions. As an individual in the great body of railroad officers, the opinion referred to presents itself to the writer in the following light: Somebody was responsible for the accident. The commission places this responsibility on the management. It gives the reasons basing its decision upon the broad theory that the protection of the lives and safety of the citizens is paramount. This argument can hardly be disputed. It holds that the management did not exhaust every effort toward this protection, by allowing an insufficiently trained engineer to have charge of a high speed passenger train. Let us assume that, not only technically but actually, the charge is true. The commission ignores any and all causes leading up to the alleged failure. It is a matter of common knowledge to anyone having anything to do with railroads, that there are certain conditions now in existence on nearly all railroads which may have entered into this failure, and which may enter into another failure of a like nature in the near future.

The commission with its universal reputation for knowledge of railroad conditions, and its vast means for acquiring information, must surely be acquainted with these conditions. If it is not, it can easily procure a large amount of data for its files for future reference; if necessary, through the sworn testimony of thousands of railroad officers. It has been pointed out to the commission that the working rule, which led to the improperly trained engineer being in charge of the train, was thrust upon the management of the railroad, under a certain amount of coercion. The commission apparently holds that it is not concerned in such details of the management. Be this as it may, the commission has justly held that the protection of the lives and safety of the citizens is paramount, and it is not doing its full duty if it does not make an honest effort to investigate and closely watch any feature, whatsoever, which may even indirectly jeopardize such protection.

In the final analysis, it is not solely a question of the public being disappointed that the intelligent use, by the commission, of the authority of the highest type of law, resolved itself into high flown language of empty meaning, but it is a question whether the commission itself will not have to share in some of the responsibility through partial justice and one-sided regulation.

Superintendent.

WHY GIVE PASSES TO EMPLOYEES?

Norfolk, Va., July 11, 1913.

To the Editor of the Railway Age Gazette:

Referring to the latest demands of railway employees for an increase in wages:

I noticed in the paper the other day that railway employees who were going to the meetings held in connection with the demand for a raise are traveling free of charge on transportation furnished them by the railways. Does it not seem very inconsistent for the railways to furnish transportation to employees who do not use it on business of the company? The public is now very properly debarred from using free transportation, but from personal experience I feel that the class of employees who are extorting these wage increases from the railways are using passes for themselves and families more than any other class of travelers. Everyone can recall instances of employees and their families traveling around in baronial style on free transportation.

I suppose that at first the issuance of passes by the railways to employees was intended to create a friendly feeling and to encourage co-operation between all concerned. If the railways are foolish enough to believe that the great value of transportation which they donate to organized labor in their employ is appreciated, they are laboring under a delusion, which the latest wage settlements must have dispelled.

We are very much concerned in this matter. In case the Interstate Commerce Commission and shippers do agree to a 5 per cent. increase in freight rates, how will it help the situation if this latest wage demand consumes every dollar the railways gain? Until this request for a 5 per cent. increase was made, they probably had no idea this latest raise was contemplated by their trainmen, but under the circumstances, we think that railway employees, who are engaged in creating a very critical industrial situation, should receive no more favors from their employers as regards transportation than does the general public.

Railway employees know full well that a strike would result in government operation until a settlement was reached and, perhaps, would encourage the advocates of general public ownership and other socialistic doctrines.

If the railway employees who are already receiving more than they earn would stop and consider that the employees of state operated railways elsewhere receive nothing like the wages paid in the United States under private operation, they would desist from attempts to bring on a critical situation.

Government employees, such as railway mail clerks, performing the most arduous duties, are now compelled to receive less wages than paid by railways, with less chance for promotion.

E. L. McColvin,

Business Manager, Chamber of Commerce of Norfolk, Va.

"THE SIGNIFICANCE OF THE STATE RATE CASE DECISIONS."

WASHINGTON, D. C., July 10, 1913.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

Will you permit the suggestion that perhaps the law, as disclosed by the Supreme Court, is not quite so adverse to investors in railway property as might be assumed from the summary of recent decisions in the editorial, "The Significance of the State Rate Case Decisions," which appeared in your issue for June 27, 1913. I refer, particularly, to the following paragraph:

"In all the state rate cases decided last week and the week before it (the Supreme Court) apparently holds that if a certain schedule of rates is confiscatory as to one of two competing railways and not confiscatory as to another, the railway as to which they are not confiscatory must accept them. It gives the weak railway Hobson's choice saying, in effect. 'You may take either confiscatory or non-confisactory rates. But in any event your competitor must make rates which as to you are confiscatory, and if you are not bankrupted by making the confiscatory rates you will be bankrupted by losing business because you do not meet them.' The principle laid down is a principle of confiscation by indirection as distinguished from a principle of confiscation by direction. The conclusion of the Supreme Court is in substance, that a given schedule of rates may be unreasonable as to one road, and reasonable as to another operating in the same territory and handling the same kind of traffic. Only the judicial mind can tell how a given schedule of rates may at the same moment be both reasonable and unreasonable. This is law because the Supreme Court says so. But it is neither economics nor business. When Lord Eldon said that the law was common sense he did not foresee the decision in the Minnesota rate case."

Whether the foregoing (a) literally defines a principle of law sanctioned by the decisions, or (b) merely describes the effect of the decisions as applied to the particular pleadings and proofs before the court, is of the greatest importance. If the Supreme Court has, indeed, held that, regardless of all facts as to the economic utility of the several lines, the rates of independent and competing carriers serving the same regions may be separately examined and those of any of them subjected to legislative reductions without regard to the effect of these reductions upon their less favorably situated competitors, then, nine-tenths of the railway mileage of the United States is already potentially bankrupt. If such is the case the legislature can make the conditions of the best located and most efficiently managed competitor the standard of rates to which every other must submit, the constitutional safeguards against confiscation endow the judiciary with no practically available power to protect at least nine-tenths of the aggregate mileage, and, as to that portion, all arguments for the right to receive justly compensatory rates must be addressed to the legislature and are entitled to consideration by the legislature only. If such is the law, then your criticisms of the state of the law are not too severe.

I venture, however, to suggest that perhaps the decisions just rendered are not authority for this devastating conclusion. It is true that your language accurately describes the effect of the decision in the Minnesota case upon the Minneapolis & St. Louis Railway, which, of course, will be compelled to accept the rates forced upon its more fortunate competitors, although those rates have been judicially found to be confiscatory as to itself. And probably the conclusion must be the same as to the effect of the exceptions to the general conclusions in other cases. But the Supreme Court could not have been expected to go outside of the pleadings and proofs of the cases before it, or to invoke for the protection of any carrier principles of law not asserted in its behalf and not capable of application save in the light of facts not disclosed by the record.

In deciding the Minnesota case, the Supreme Court, speaking by Mr. Justice Hughes, quoted, with approval from the decision in *Smyth v. Ames* (169 *U. S.* 466), in part, as follows:

"What the company is entitled to ask is a fair return upon the value of that which it employs for the public convenience. On the other hand, what the public is entitled to demand is that no more be exacted from it for the use of a public highway than the services rendered by it are reasonably worth."

And, in the same decision, the court, in terms that will often hereafter be cited as the sanction of private rights even when qualified by a public interest in the use of such private rights, said:

"The property of the railroad corporation has been devoted to a public use. There is always the obligation springing from the nature of the business in which it is engaged—which private exigency may not be permitted to ignore—that there shall not be an exorbitant charge for the service rendered. But the state has not seen fit to undertake the service itself; and the private property embarked in it is not placed at the mercy of legislative caprice. It rests secure under the constitutional protection which extends not merely to the title but to the right to receive just compensation for the service given to the public."

An examination of the Minnesota case, as presented to the Supreme Court, shows, however, that after asserting that the state-made rates were unlawful as an interference with interstate commerce, a contention that was not sustained, each of the carriers separately relied upon such showing of confiscation as could be made by the segregation of its property, expenses and receipts in Minnesota from its general business. This portion of the attack upon the state-made rates was thus made to rest entirely upon comparisons between the valuation of the property of each separate carrier and its separate balance of receipts over expenses. There was no suggestion that either the Great Northern or the Northern Pacific was deprived of its property in the use of its facilities in that the public, acting through the state legislature, had demanded that services be rendered for less than they were reasonably worth (*Smyth v. Ames, supra*) or that the just compensation or fair rate of return on the fair value of the property used in the public service, to which both are entitled, might be measured by reference to the lowest rates that would not be confiscatory of the property of another carrier, performing useful and necessary services of the same character in the same region. This was an omission which, in view of the uncertainties of the law prior to the recent decisions, is not subject to criticism, but it is one that may have deprived the court of opportunity to protect these carriers in the enjoyment of the legitimate rewards of their superior efficiency and practically of the power to protect the less fortunate Minneapolis & St. Louis from the dangers of its competitive situation.

Without attempting the exhaustive examination of authorities necessary fully to support my contention, I venture the suggestion that whenever a carrier, however, efficient by reason of its location or superior management, can show, first, that a rate or schedule of rates prescribed under legislative authority is so low as to deprive any competitor of its right to a fair return upon the fair value of its property, and, second, that the services of such competitor are actually necessary if the public is to be adequately supplied with transportation, then, in such case, the rate or schedule so prescribed is below the lawful measure of "what the services rendered by it are reasonably worth," and whatever return the more fortunate and efficient carrier may be able to obtain from a rate or schedule which would afford a fair return to such competitor is no more than the fair return to which the circumstances entitle the more efficient line. If so, any compulsory reduction that if applied to the weaker line would deprive it of its right to a fair return deprives the more efficient carrier, as well, of a part of its just compensation and is *pro tanto* a confiscation of its right in the use of its own property. I am unable to find anything actually inconsistent with this view in the recent decisions.

H. T. NEWCOMB,
Member of the District of Columbia Bar.

THE QUESTION OF INCREASED FREIGHT RATES.

Agricultural Expert Argues an Advance Would Help Farmers, and Outlines Plan for Investigating Entire Subject.

By A. B. Hulit,
Managing Director, American Agricultural Association.

When the American bankers were supposed to have taken unofficial action calculated to discourage the creation and sale of so many farm securities, many of the officials of the southern and western states saw that in this act was the beginning of a general slowing down in all kinds of development, and that if the market for farm securities was to be curtailed, a very great hardship would be imposed upon the farmers who were endeavoring to build homes in the newer sections.

So great was the uneasiness caused by this action that it became one of the reasons why the immigration officials of some of the states decided to hold a conference in Chicago for the purpose, among other things, of trying to find out why the bankers had taken such action and, if possible, to work out some plan which would counteract these influences. At this conference a permanent organization of state immigration officials was perfected under the name of the National Association of State Immigration Officials, and I was elected commissioner-general of that organization, and Chicago was designated as our permanent headquarters.

It became part of my duty to investigate the reasons why the bankers had taken such action as they had against farm mortgages, with the result that I found that while there had not been any real official action taken, the word had been passed down the line to discourage the sale of farm securities, and that as a rule the bankers were doing so. I soon discovered the reasons why this was, which were as follows:

In the development of so much cheap land in the south and west, which was being placed on the market at comparatively high prices, the sellers in making sales usually took a first mortgage on the land as part payment. These mortgages bore from 6 to 8 per cent. interest and were becoming very popular with the investors, so much so that immense quantities of money that had been invested in other securities or was on time deposit in the banks was being diverted from the ordinary commercial channels.

The bankers argued that if we continued our prosperity, if the crops were good and prices remained high, these notes could be paid; but, they contended, if the crops should fail and prices become low, these notes could not be paid, and some of them advanced the argument that whether or not crop conditions remained normal, with the disposition of the people in the various states to pass laws which affected the railroads, cutting down their revenue and placing so many burdens upon them, sooner or later the railroads would begin to feel the effect and those who were holding railroad securities would become uneasy, knowing that the railroads could not pay dividends under the rapidly developing new conditions; that the railroads' credit would be lost, and that sooner or later the roads would have to withdraw their support from all development enterprises. These bankers pointed out that the railroads had been and were the real inspiration behind everything that contributed to the development of the western and southern states. I was told three years ago that the railroads could not hold up under the loads placed upon them, and that owing to the enormous amount of money invested in them, which was represented very largely by their stocks and bonds, which were held by so many people, the agitation against them laid the danger of a financial panic that would come within two years. The bankers I consulted, said, "When that panic comes it will close down many of our banks—those which for any reason have become directly or indirectly owners of farm securities or interested in development enterprises. It will close many of our factories, restricting the output of all, causing a general slowing down all along the lines. Railroad earnings will fall off; prices of farm products will drop and money will become scarce." A few of these bankers pointed out the fact, that in the building of the Panama Canal lay a danger to the railroads and indirectly to the people of the West that must be considered.

When at first these arguments were advanced, I, like a good many of our optimistic western men, could not see things that way, and I accused the bankers of entertaining narrow and selfish motives and so reported to our members. My own faith in the West and its future was and is yet unlimited. I simply would not allow myself to foresee this danger. But in the light of the experience of these last three years, I am now compelled to admit that I was wrong and that the bankers understood these problems far better than I did. They were right then, and are now, and I want to say that in the action they are presumed to have taken lies our safety today. They are reasonably well prepared to meet any conditions that may arise. But the prospects of the panic they predicted are so evident that I am now forced to further admit that the bankers fully understood the situation. In discussing the matter with some of them recently, they say, "Yes, we are threatened with a panic now, and it is a surprise to us that it did not come sooner and with more velocity. The facts are, we have had such good crops which sold for such high prices that the farmers are still prosperous, as are our manufacturers and general business men."

In my analysis of the present financial situation, I cannot find any particular class of men who have cause for complaint but the railroad men and their security holders, and they are certainly in an unsatisfactory frame of mind. I have been studying this phase of the situation, with the result that I have found that when the federal government created the Interstate Commerce Commission and gave it the power to fix freight rates and the various states followed suit, the lowering of rates was carried on in a wholesale way and to the danger point. But serious as this was and still remains, it does not represent all of the trouble; for with the lowering of freight rates the cost of living began to soar and the men began to ask for and in many cases were granted raises in their wages. Raw materials and new equipment began to rise in price. The new laws compelled the railroads to shorten the hours of their men and to adopt methods in their operations which added to their costs. Stop and make a little calculation on what it will cost the railroads to replace their wooden passenger and express cars with new ones of steel. A big burden of itself; but this is not all. There are an endless number of items that represent great expense to the railroads. The cities are demanding new terminals, elevated and electrified tracks. The great floods and other great calamities like the San Francisco fire and the Omaha cyclone have all added to the burdens of the railroads. The foreign wars have affected the money market; then the approaching completion of the Panama Canal, which the investors believe will be the means of diverting large quantities of transcontinental freight from the railroads that need it, will affect the earnings of these roads.

I find that while the railroads are now enjoying a fair amount of business, their cost of operation is advancing at an alarming rate. This is apparent to every one, and especially to the investors. I find that it is almost impossible to sell railroad securities at a price the roads can afford to accept. Now, here is the problem: if the roads cannot earn the money with which to operate, buy new equipment and pay dividends, they must bor-

row it on deflated security, which they cannot do under the present circumstances. I only regret that I cannot here go into all of the minute details of the entire situation and prove that whether they want to or not, they cannot meet the demands placed upon them. It is a physical impossibility; and it is my private opinion that if we are able to temporarily prevent a financial panic and if some relief is not given the railroads at once, the basic cause of the trouble will remain and if, perchance, we should have a poor crop next year or a good crop and poor prices, we will see a panic that will paralyze all industry before eighteen months are over.

It is a pretty generally conceded fact that the railroads and their influence are the life's blood of our industrial activity, and I contend that if we stagnate the railway industry, inactivity will follow. I believe the time has come when the American people should discard the muck-raker and the socialist agitator and assume full control of the situation; that the public should become conversant with the facts; and if I am right in concluding that in the railroads' situation we have found the real cause of the threatened difficulty, and that, simmered down to a fine point, the whole trouble lies in the fact that the railroads are unable, with their present earnings, to meet the demands, then we can without serious injury to ourselves supply the remedy by simply granting a temporary raise in the freight rates of 10 per cent. for a period of ten years or long enough to enable the roads to meet the conditions the public has made.

I hold that in principle the public was and is right in demanding federal regulation of the rate-making power of these roads and is right in requiring the railroads properly to equip their trains and to run them so as to give better service. But I also contend that in doing these things we should use ordinary business precaution; for, after all, the railroads are legitimate enterprises of vast importance to the public as a whole, and what affects them affects the public. I believe that a careful, dispassionate investigation of the uncolored facts will show to any reasonable man that we have placed too heavy a burden on these roads at one time and under conditions which could not be foreseen when we acted.

A large part of the legislation reducing freight and passenger rates was passed in the spring of 1907. Who foresaw then that a little later in that year the railway employees would demand and secure by arbitration large advances in their wages? Who foresaw that a panic would come in October, 1907, as a result of which the earnings of the railways would be reduced by $300,000,000 in the calendar year 1908 as compared with the calendar year 1907? Who foresaw that the net earnings per mile in both 1908 and 1909 would be less than they were in 1907, and that while they would increase in 1910, they would again decline heavily in 1911 and 1912? Who foresaw that in every year since 1907 the railway employees would continue to make further demands for increases in wages, every one of which arbitration boards would grant, until, while the railways in their efforts to economize would employ 2,300 men less in 1911 than in 1907, they would be obliged to pay to this smaller number of employees almost $140,000,000 more in wages in 1911 than they had to pay the large number of employees in 1907? And since 1911 the roads have had to make further increases in wages amounting to several millions, and the conductors and trainmen in Eastern territory are now demanding still further increases which, it is estimated, will amount to $17,000,000 a year. Not only have the railways been obliged to make these large increases in the wages of their employees, but they have been compelled to make numerous increased expenditures for other purposes, and they are confronted with demands for still further increases in expenditures. In compliance with the safety appliances law passed in 1910 they are now engaged in spending about $60,000,000 for improvements in safety appliances. The various states have passed numerous laws requiring them to increase the number of men employed in train crews, and it is estimated that train crew legislation already passed is costing them $5,000,000 a year and that if similar legislation were applied throughout the country, as is proposed, the total cost of it would be from $13,000,000 to $20,000,000 a year. It is proposed to require them to install block signals on all of their lines, and if this is done it will involve an additional investment of over $260,000,000. It is proposed to require them to widen clearances between their tracks and overhead and lateral objects, and it is estimated that if the proposed legislation were passed it would involve an expenditure of $444,000,000. Many communities are demanding track elevation, and how much this will cost is indicated by the fact that track elevation work now being done in Chicago alone already has cost $70,000,000 and will before it is done cost $150,000,000. It is proposed to require the railways to replace all of their wooden passenger train equipment with steel equipment, and this, it is estimated, would cost $633,000,000. I repeat, who foresaw all these developments when the campaign for lower freight and passenger rates was begun some years ago? And can it reasonably be assumed that the railways can go on forever bearing up under these increasing expenses and demands for increased investment without any increases in their rates?

I have faith in the future. The people are honest and courageous, and in the spirit of fairness they will see to it that wrongs are righted when the time comes. There is an underlying and sometimes unappreciated disposition on the part of the men behind the plows to see the game of life played fairly. I have faith in these men whom I am now trying to serve as best I know how, in my official capacity, both as the commissioner-general of the National Association of State Immigration Officials and as managing director of the American Agricultural Association.

I fully appreciate the fact that I am assuming toward the railroads a new and what will become for the present an unpopular position. But I am convinced that I am right, and that it is my solemn duty to throw out the warning to our members and to those who are not but whom we, as organization workers, are trying to serve.

I am now going to review this situation from the standpoint of the farmer, manufacturer and laborer, and especially those who are engaged in railroad work as employees.

To begin with, I assume that the farmers are the most directly interested in this subject because they are, as a rule, large patrons of the railroads, and their success as land owners depends very largely upon their ability to produce and then market their products; and the value of their lands is increased or diminished just as they are able to operate at a profit. I also assume that the present conditions, insofar as the farmers are concerned, are satisfactory; but that, if by any chance the factories and railroads begin to lay off their men, this would affect the price of their commodities as well as their lands. This, the farmers will concede, is sound logic. Now, the only question is, will we see a slowing down? If so, what will be the cause? What is the remedy? If I am right in this argument, and the trouble emanates from the railroad situation and is based upon the fundamental fact that the railroads are not able, with the rates they now have, to meet the conditions, and that the granting of a 10 per cent. increase in these rates for ten years will avert the trouble, then we have the cause and are shown very plainly the remedy, and it is our duty to ourselves to apply it.

The next question is, can the farmers afford to apply the remedy? Let us see, taking one illustration to prove the point. We will assume that a certain town does $100,000 a year business with the railroads and that the granting of a 10 per cent. raise in rates would mean that the people in and about that town would be compelled to pay $10,000 a year more in freight. Let us go on and assume that this $100,000 of freight comes directly and indirectly from 100,000 acres of land about that town; land worth under normal conditions $60 per acre, and which is gradually rising in price. But if we had a panic and these farmers began to lose money, and this land should depreciate $10 per acre immediately, it would become unsalable and it would be difficult for the farmers to borrow money or to repay it. Assuming this condition prevailing, it would be a

very easy matter for practical farmers to imagine that their land would depreciate $10 per acre. If so, the total loss to the men who own this 100,000 acres of land around this town would be $1,000,000, or enough to have paid the $10,000 per year in increased freight rates for one hundred years.

Now, as a matter of good business, if it can be shown that in the granting of this 10 per cent. increase in rates the danger of a panic emanating from this source can be averted, would it not be good judgment to grant it, as a mere precautionary measure, a sort of insurance, against adversity?

Now, this is not an isolated case chosen to illustrate the point, but it is typical of the conditions found about every town, large or small, especially in the south and west.

Now let us take the case of a manufacturer who we will say has $1,000,000 invested and is running at full capacity and under fairly favorable conditions, and that, as is the case with most manufacturers, he is a heavy borrower at the banks and has out long time notes or bonds which draw a fixed income, whether it is earned or not, and that this same manufacturer has sold immense quantities of his products for which he holds unpaid notes or open accounts that are good when times are normal; and let us assume that financial conditions have been developed which have brought a panic and he is compelled to lay off one-half of his employees and cut down his output one-half; his fixed charges remain about the same. What would be the condition of this manufacturer under these circumstances? If the granting of a raise of 10 per cent. in freight rates will possibly remove this danger, had he not better grant it? Those who have been seen and who have investigated it are today favoring such a raise.

Then we must consider the laborers. They are having it hard enough now with the present wage scale and the high cost of living to make both ends meet. They look ahead and see the day when, with approaching old age, they will not have been able to lay aside anything. As a rule, they do not have a surplus now, but suppose we had a period of three or four years of hard times which necessitated from 25 to 50 per cent. of them being thrown out of employment with no means of support for themselves and families. God grant that it will not come; but do not the facts indicate that it will? Do not the arguments at hand go to prove that we are even now face to face with a panic? I am not going to take sides here with or against these men in their struggle for more wages; that is their business; but I am going to suggest here that the laboring men lay aside their prejudices and here and now make an investigation of these facts which I believe are so serious as to demand their attention, as they certainly do demand it of the farmers and business men in general.

I also appreciate the fact that with our people so widely scattered all over the country and all so busy with their own affairs, it will prove to be an impossibility for each one to make an individual investigation of the entire situation, even if each could be aroused to the personal necessity for doing it. Then the time is too short; so I have suggested the idea of having the American Agricultural Association assume the responsibility of acting for the public in this important matter, on the theory that this organization is composed of all classes of men whose reputation is a sufficient guarantee that their findings will be honest and fair. I have opposed the idea of having this investigation made by officials in power who are or might be influenced by their political alliances.

I have, therefore, asked the president of the American Agricultural Association, R. S. Vessey, former governor of South Dakota, to create a special committee of five well known men to act as a body for the purpose of immediately setting on foot an exhaustive, painstaking investigation; this committee to be composed of business men representing each political party and who are known to be fair minded, capable men. Mr. Vessey has agreed to appoint this committee. I have suggested that it assemble as soon as possible, and that it invite the railroads to come in and make a showing of their case and also invite the farmers, business men and the laboring classes to appear before it in the hope that it will get to the bottom of the whole trouble and that its report will be so fair and honest that it will be accepted as authority on the subject. It is a great work for mankind at a time when it appears to be needed. I believe the public will appreciate this work and that, in conducting it along this line, we will be able to find the facts, and if we do and they are given wide circulation as such, without being made to meet the views of some man or group of men that cannot see except from their own selfish viewpoint, much good will result. In any event no harm can be done.

FIGHTING THE BOLL WEEVIL EAST OF THE MISSISSIPPI.

President Finley, of the Southern Railway, speaking recently of conditions in the territory east of the Mississippi river into which the Mexican cotton boll weevil has spread, said:

"The boll weevil has appeared in cotton fields along the lines of the Southern Railway and its associated companies in Mississippi and Western Alabama. With a view to obtaining first-hand information as to conditions, I have had one of my assistants visit the infested territory in company with the manager of our department of farm improvement work, who is giving his personal attention to directing the efforts we are making to aid in controlling the weevil.

"Generally speaking, the weevil is present in much of the territory west of a line from Shelby county, Tenn., running diagonally across the states of Mississippi and Alabama to the southeast corner of Georgia. Probably owing to the overflow followed by cold weather, the weevil has been found in relatively few localities in that part of the Mississippi delta traversed by our lines.

"At every point visited in the infested territory a determined and intelligent fight is being made against the weevil. The farmers are being aided and advised in this by the state agricultural commissioners, the agents of the United States department of agriculture, and by our department of farm improvement work. This fight was begun as soon as the weevils which survived the winter began to appear in the fields. While the cotton was small it was possible to find and destroy large numbers of the weevils. With the growth of the plant it has become increasingly difficult to find the insects and the fight is now being carried on by gathering and burning the squares in which the female weevil has deposited eggs so as to reduce the second generation to a minimum. These squares are easily found, as, soon after an egg has been laid, the square flares and turns yellow, later falling to the ground. The object of this is to keep down the number of weevils maturing during the fruiting season. It is important that, at the same time, the crop shall be pushed by rapid and shallow cultivation.

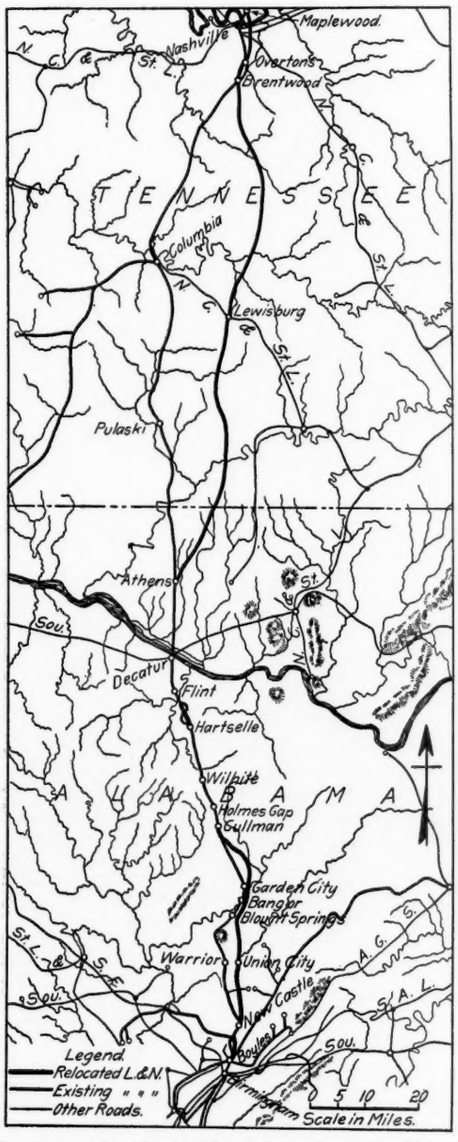
"I am advised that it is the opinion of men familiar with the weevil that these methods of control are proving fully as effective in Alabama and Mississippi as they have been west of the Mississippi river, where, in many localities, more cotton is grown with the weevil than before its appearance. Present indications are that the destruction of cotton by the boll weevil will not be disastrous in any locality along our lines; that where the advice of the government agents and of our department of farm improvement work is followed good crops will be made, and that, where farmers are doing the best work, production will be fairly up to normal. Cotton acreage has been reduced to some extent, the acreage in corn and other crops being increased.

"It is gratifying to know that the appearance of the weevil at points on our lines has not brought about the conditions of panic that followed its spread into some other localities. I believe that some credit for this may be taken by the managements of the Southern Railway for having inaugurated the work of advising farmers how to deal with the weevil in advance of its appearance."

EXTENSIVE IMPROVEMENTS ON THE L. & N.

Interesting Features of the Bridge, Tunnel and Grading Work Now Under Way Between Nashville and Birmingham.

The Louisville & Nashville is now carrying out one of the most extensive programs of improvement work in the country. This work extends over more than 300 miles of line and a large proportion of it is heavy. There are at present two distinct projects under way. The first is on the main line between Madison, Tenn., about nine miles north of Nashville, and Birmingham, Ala., where a second track is being built, the line revised and grades reduced. The second is between Paris, Ky., and Jackson, where the old line is being improved as to grade and line, and about 30 miles of new line is being built.

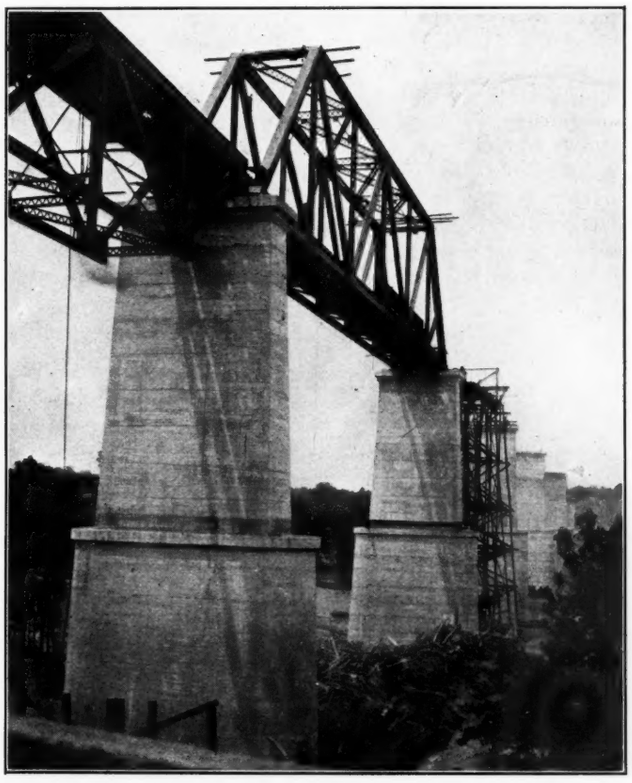


Map of Portion of the Main Line of the L. & N., Showing Revisions Between Nashville and Birmingham.

The present article covers the main line work; the Paris-Jackson section will be described in a later issue.

OPERATION OF PRESENT LINE.

The line between Madison and Birmingham is the logical place to begin heavy improvement work on the Louisville & Nashville system since the line from St. Louis and Evansville joins the main stem from Cincinnati just north of Nashville and the numerous Alabama lines all join the main line at or south of Boyles, three miles north of Birmingham, resulting in the concentration of a heavy traffic on this 200-mile section between Nashville and Birmingham. The undertaking of this important improvement work is easily justified by the present traffic on the L. & N., the average density of which has increased over 30 per cent. in the last decade. Since the increase in traffic on the branch lines is relatively slow the increase on the main line, and particularly the Nashville to Birmingham section, must have been considerably greater than this average. The average total number of train movements per day over this portion of the line in the fiscal year 1910-11 was 34. In the last half of 1911, when studies for the present improvement were being made, the average number of revenue trains per day between Birmingham and Decatur was 37.7. Local transportation



Cumberland River Bridge in an Early Stage of Erection.

officers are confident that this figure was greatly increased during 1912, although no record is available. In March, 1913, there was an average of 64 trains per day, although this number included some work trains.

The train movements include six through passenger and from two to eight local passenger trains. The freight handled on this district is mixed in class, and while the products of mines furnish more than half of the tonnage handled south of Decatur, the tonnage is fairly evenly divided between the products of mines, agriculture, forests, manufacturers and merchandise on the line north of Decatur. This division of traffic, of course, does not produce a preponderance either of schedule or drag freight. The north and southbound tonnage is very nearly balanced. The old ruling grade between Nashville and Birmingham was 1.25 per cent. in both directions, and the tonnage rating for slow freight was 800 tons, using 4-6-0 freight

engine weighing 183,000 lbs. on drivers and having a tractive effort of 35,000 lbs.

THE NEW LINE.

The new ruling grade both ways is 0.4 per cent. between Nashville and Decatur and 0.5 per cent. between Decatur and Birmingham. Theoretically the 0.5 per cent. grade should allow an increase in rating to about 2,000 tons if the same class of engines is used and it is planned to put on heavier engines which will still further increase train loads. There will be two pusher grades, one of 1.25 per cent. between Wilhite and Holmes Gap, and the other of 0.9 per cent. about 18 miles north of Athens. It is planned to use Mikado type engines with a tractive effort of 55,000 lbs. in this pusher service. The Boyles yard is to be improved by lengthening the present tracks from a capacity of 50 cars to a maximum of 120 cars and by changing it from a flat to a gravity yard. It is possible that some changes will also be made in the Oakworth yard, 15 miles south of Decatur.

This line is being rebuilt to the highest standards of the L. & N. system. From Nashville to Decatur 4 deg. curves are maximum and with 1 and 2 deg. curves used very largely. South of Decatur a few 5 and 6 deg. curves had to be used, practically all of the latter being on the pusher grade where the movement will be slow and plenty of power available. Timber bridges are being almost entirely eliminated and concrete boxes and arches are used wherever possible. While the old line had 98 bridges there will only be 17 open waterways in the 200 miles of new line. The standard roadbed section is 37 ft. wide in cuts, 31 ft. wide on fills up to 20 ft. high and 33 ft. wide for fills over 20 ft. The track will be laid with 90-lb. A. R. A.-B rails on hardwood ties and slag ballast. Tie plates are used on all curves sharper than 1 deg.

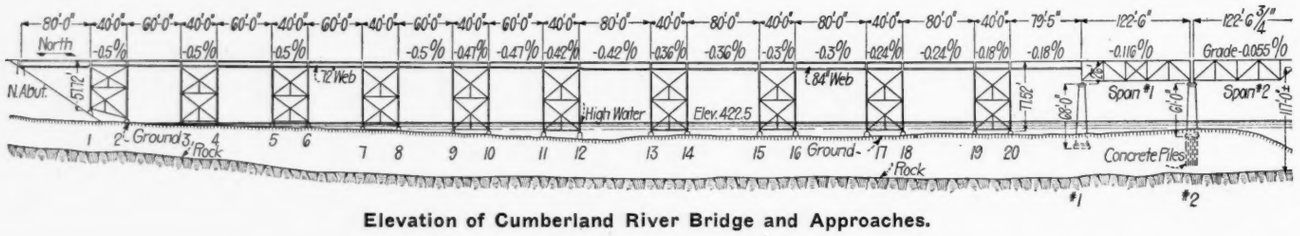
The work now under way consists of reducing grades on the existing double track line between Madison and Maplewood, about seven miles north of Nashville; the construction of a new double track freight line from Maplewood to Overtons, 6.5 miles south of Nashville, passing east of the city; the revision of line and the addition of second track from Overtons to Brentwood, about three miles; the construction of a new single track line known as the Lewisburg & Northern from Brentwood to Athens; and the revision of line and addition of second track from Athens to Birmingham.

CUMBERLAND RIVER BRIDGE.

The new line between Maplewood and Overtons crosses the Cumberland river just east of the city of Nashville on a steel viaduct and through truss bridge with a total length of 2,807 ft. This bridge is single track, although the line on both sides of it is double track. The north approach trestle, 1,179 ft. 5 in. long, consists of ten steel towers carrying 40 ft. tower girders and five 60 ft. and six 80 ft. intermediate girders. The truss spans from north to south are one 124 ft. deck, one 126 ft. 6 in. deck, one 300 ft. through, three 200 ft. through and one 124 ft. 6 in. deck. The south approach trestle is 352 ft. 5 in. long, consisting of three towers carrying 30 ft. tower girders and one 82 ft. 5 in. and three 60 ft. intermediate girders. The substructure consists of two reinforced concrete abutments, eight concrete piers and the concrete pedestals under the bents of the steel trestle approaches. The north abutment, the pedestals under the north approach and pier 1 rest on clay; pier 2 on concrete piles, and piers 3 to 8 on rock, 10 to 20 ft. below the ground, the pedestals under the south approach being carried to rock if it could be reached near the surface or on clay if no rock was found at an elevation 6 ft. below the ground line.

The abutments are of the pier type built of reinforced concrete. They are of the same general design, although they differ considerably in detail as the north one is 72 ft. high, and the south one 56 ft. This difference is also due partly to the fact that the south one is founded on rock where a foundation pressure of 10,000 lbs. is allowable in design, and the north one on clay where the foundation pressure cannot exceed 4,500 lbs. The fill is allowed to take its natural slope around these abutments, a backwall being carried up from the bridge seat nearly to the base of the rail to prevent the fill from covering the bearings. The shaft of the south abutment consists of two piers 4 ft. wide and 4 ft. thick at the bridge seat and 10 ft. thick at the top of footing. These piers are spaced 5 ft. apart in the clear and are connected by a curtain wall 9 in. thick. The footing is spread to 29 ft. x 30 ft., the two piers being extended to rock without any slab connection for distributing the pressure. In the case of the north abutment, the piers are 14 ft. thick at the bottom, resting on concrete slab footings which are spread to 24 ft. x 38 ft., and have a minimum thickness of 12 in.

The river piers are of mass design, varying in height from 61 ft. to 124 ft. A great deal of trouble was experienced in driving the cofferdams of piers 4 to 8, located on a gravel bar, on account of the fact that the city had in previous years built rough masonry chambers in this bar to make it serve as a filter bed for the city water supply. In driving the first cofferdam the steel piling struck the masonry of one of these old galleries, but the foreman thought that by sufficient driving the obstruction could be passed. By this continued driving the piles were seriously broomed and the submerged masonry was broken just enough to provide passages into the bottom of the cofferdam for the entrance of water. As some of these galleries were 6 ft. square inside, it became a very difficult matter to pump out this cofferdam enough to reach bottom and discover the difficulty. Similar troubles were experienced in the second cofferdam which was driven, but in this case the trouble was analyzed and when work at the third pier began, the contractor was prepared to handle the situation. As soon as each pile struck the old masonry, driving was stopped immediately and when the complete dam was driven thus far it was possible by heavy pumping to unwater the dam and excavate the material overlying the masonry. The stone could then be removed and the piles driven on down to rock.



Elevation of Cumberland River Bridge and Approaches.

The Gould steel piling which was used for this work consists of standard channels with flanges overlapping and with timbers bolted in alternate sections, the swelling of which seals the joints and makes the dam watertight. A slight improvement has been made recently in this type of pile by adding a section of angle over the lower end to form a driving edge, making it possible to penetrate harder material with less damage to the channel section. On this work it was possible to get several uses out of each pile. When the masonry inside the cofferdam had been finished to a level slightly above the stage of water in the river, the dam was pumped out, the nuts were removed from the bolts holding the sections together, all these bolts having been placed with the nuts inside, and the bolts were then knocked out with a light sledge and the channels pulled.

Pier 2 is supported on 78 reinforced concrete piles 14 in. square at the butt, 9 in. square at the point and 35 ft. long. Wooden driving blocks were used over the piles, as previous experience had shown wood to be the best cushion obtainable. To still further protect the head of the pile from battering, two cement sacks filled with shavings or coarse sawdust were placed in the hood holding the driving block. As considerable heat is produced by the blows of the driver it was found necessary to wet these sacks to prevent their burning or packing solidly.

A series of tests was made during the early stages of the foundation work to determine the possibility of forming concrete in the sand and gravel bar under the pier footings by injecting a thin grout through pipes driven down in the bar. These tests showed that concrete could be so formed but in general it was not of a satisfactory character, due partly to difficulties in placing the grout, which were afterwards overcome, and partly to dirt in the gravel which caused a poor bond in the resulting concrete.

The masonry was placed from two stationary mixer plants, one on each shore, and a third mixer which was moved around as needed. The south side plant was located on the side hill adjacent to pier 8. The cement house was placed above the mixer, but below the side track of the Tennessee Central so that the cement could be handled by gravity. A good limestone quarry was opened about 800 ft. east of the bridge site on the south side of the river and a crusher plant was installed to furnish crushed rock and pulverized screenings for the concrete aggregate. This material was carried to the mixer plant on the south side in side dump cars which were divided into compartments holding the proper amount for one batch of the one yard mixer. These cars were handled by mules on a track running over the mixer so that the material could be dropped directly into the hopper. The concrete was dumped into tram cars operated by a cable and running on a trestle alongside the piers. Elevators at each pier raised the concrete to the necessary height. Pier 8 and the adjacent four pedestals were placed by the same derrick which had been installed to unload form lumber and other material from cars on the siding. The ¼ yard portable mixer was used to place the south abutment and the remaining pedestals. It was also used to push the work on pier 4.

The mixer plant on the north bank was located between piers 2 and 3, the cement house and storage bins being located over the mixer. Cement was transferred across the river on barges and the stone and screenings were brought from the quarry in barges which were loaded in a small slough about 400 ft. from the crusher plant. A gasolene boat was used to tow these barges. The stone and screenings were transferred from the barges to the storage bins by a derrick and clam shell bucket, and the mixer was charged through a hopper graduated to show the correct proportion for a batch. The mixer discharged into the side dump cars operating on a track laid on the center line of the bridge. The north abutment was placed first, a derrick placing the concrete in the forms. The elevation of the track was high enough to allow the concrete to be dumped directly into the pedestal forms and the track was shortened as each pair of pedestals was placed. Elevators were used for placing the concrete in the piers.

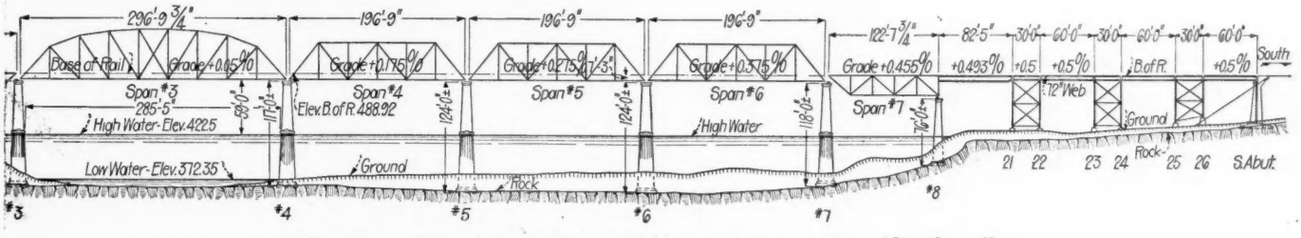
The superstructure was erected continuously from the south end, steel being brought in over the new line and stored in a temporary yard along the new track south of the bridge. The total tonnage was about 3,700 tons. The contractor used one 25-ton locomotive crane and one 100-ton derrick car with an 84 ft. boom for erection, no member of the truss spans being heavier than the girder spans in the approach trestle. The viaduct was erected by the derrick car, working out on the structure as it was erected. The truss spans were placed on falsework. As the third span is the only one over the water at low stages of the river, it was possible by watching for opportune times, to erect all the spans on falsework.

The contract for the substructure and the erection of the superstructure was handled by the Foster, Creighton, Gould Company, Nashville, Tenn., and at the present rate of progress will be finished well within the contract time. The substructure was completed in about one-half the contract time.

RODNOR YARD.

A new yard which will have an ultimate capacity of 4,700 cars is being built south of the river and just north of the junction of the new line with the old at Overtons. It will have two humps for classification of northbound and southbound traffic, and will probably be the largest hump yard in the South. The principal yard capacities for present construction and future development are as follows:

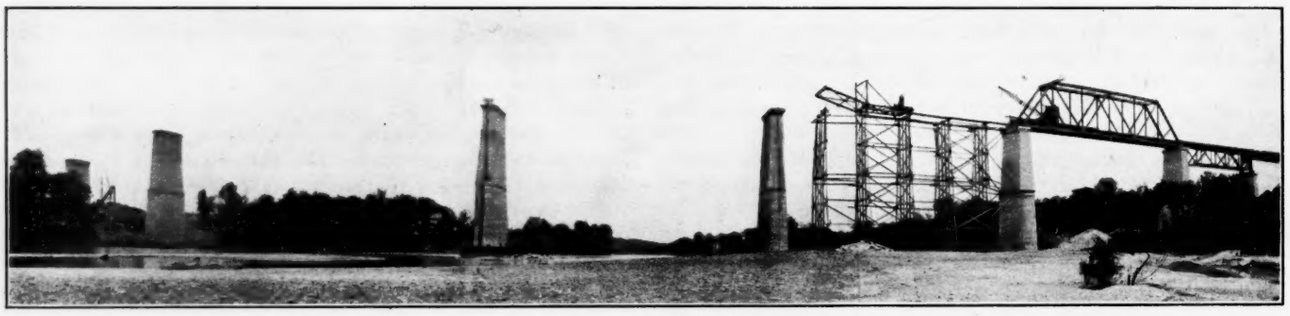
Name of yard.	Present capacity.	Total development.
Northbound receiving	471	846
Northbound classification	622	757
Northbound advance	541	717
Southbound receiving	477	630
Southbound classification	446	566
Southbound advance	600	900
Repair yard	168	303
Total	3,325	4,719



Elevation of Cumberland River Bridge and Approaches (Continued).

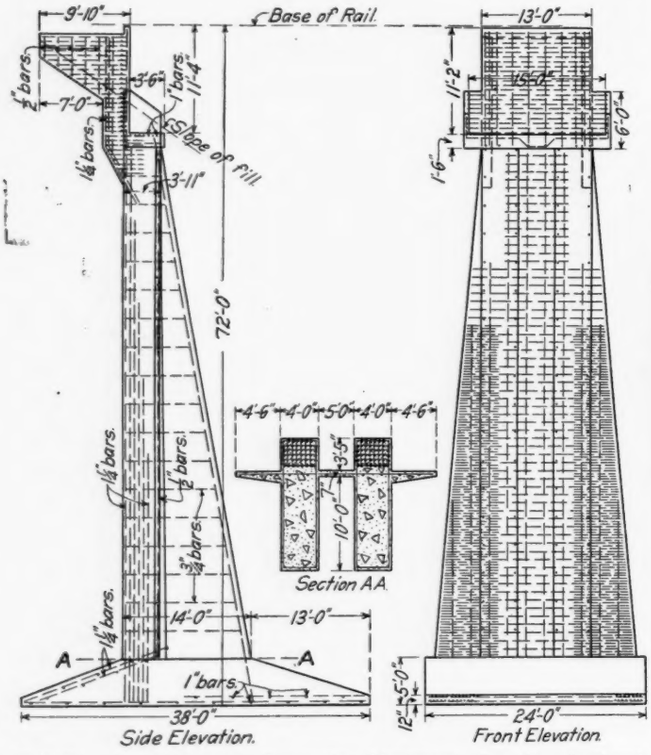
In addition to these main yards there are stock pens, icing tracks and platforms, as well as all necessary engine leads and service tracks. The yard tracks are 13 ft. center to center and the ladder frogs are No. 8. Main line frogs are No. 9½. The yard is almost 2.5 miles long and will contain 40 miles of tracks in the present development. This construction will require the handling of 905,000 yds. of excavation and 1,330,000 yds. of fill. There are four shovels at work on the site now and two more will be added to push this work as much as possible. The plan is to complete a single track fill for the entire length of the yard at the adopted grade in order to handle material for the buildings and other incidental work. Most of the excavation is in solid blue limestone.

A complete engine terminal is included in the plan, the roundhouse to have 30 stalls in a 60-stall circle. This house will be located on a fill from 20 to 35 ft. deep, necessitating a special design for the footings. Reinforced concrete columns and beams will support the walls and pits, these footings to be placed before the fill is made. After the fill is complete around the footings, the walls and roof will be built. The walls will be of brick, the roof trusses of wood in the roundhouse proper and of steel in the machine shop; the smoke jacks will be 18 in. in diameter, and of asbestos, and the windows will be provided with steel sash. There will be a 90 ft. turntable, and a machine shop and boiler washing plant in connection with the roundhouse. The coaling station will have a capacity of 100 tons. An open car repair shed of steel will be provided in the car repair yard. It will be 60 ft. wide x 200 ft. long with open



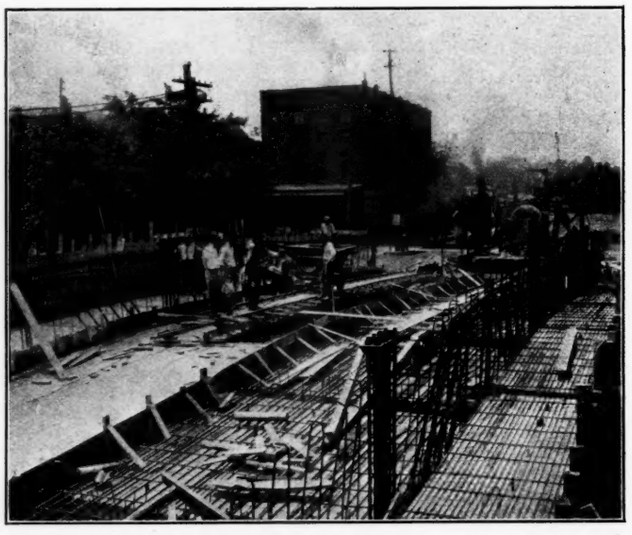
Panorama of Cumberland River Bridge with One Truss Span Erected and False Work Being Placed for the Second.

sides and a monitor deck in which steel sash will be placed. The roof will be covered with corrugated galvanized iron. This shed will cover three tracks and will make possible repairs in bad weather. Near the repair shed will be a brick and frame building, 60 ft. x 200 ft., used for a tinshop and material storehouse. There will be a two-story oil storage building, 40 ft. x 80 ft., of brick and reinforced concrete construction. It will be equipped with ten oil storage tanks and mechanical pumps. Other buildings in the yard include a 50 ft. x 50 ft. brick store and office building, two car inspectors' offices, three yard offices, an engineers' wash and locker room and numerous toilets.

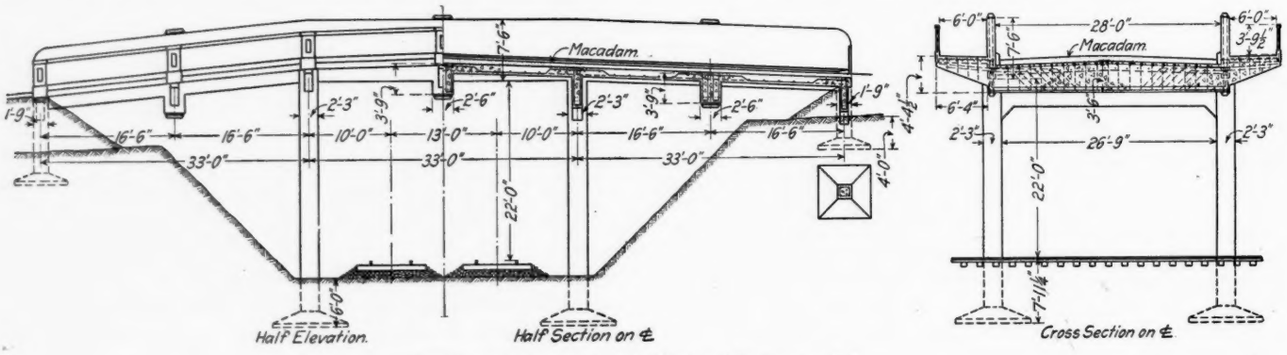


Details of Reinforced Concrete Abutment for Cumberland River Bridge.

From Overtons to Brentwood, about three miles, the revision parallels the existing line and there is little work of interest. The summit cut at Brentwood with a new grade about 45 ft. below the existing track, contains about 300,000 yds. of solid rock. South of Brentwood the new line leaves the old, running east of south and continuing on an entirely new location until it strikes the old line again at Athens, 98 miles south. This new line is as much as 17 miles from the old in some places and involves moderately heavy work. There are two tunnels, one of which is on a six-mile pusher grade of 0.9 per cent. The only town of any size on this new location is Lewisburg, which has a population of about 2,000.



Reinforcement and Contractors' Plant for One of the Cullman Viaducts.



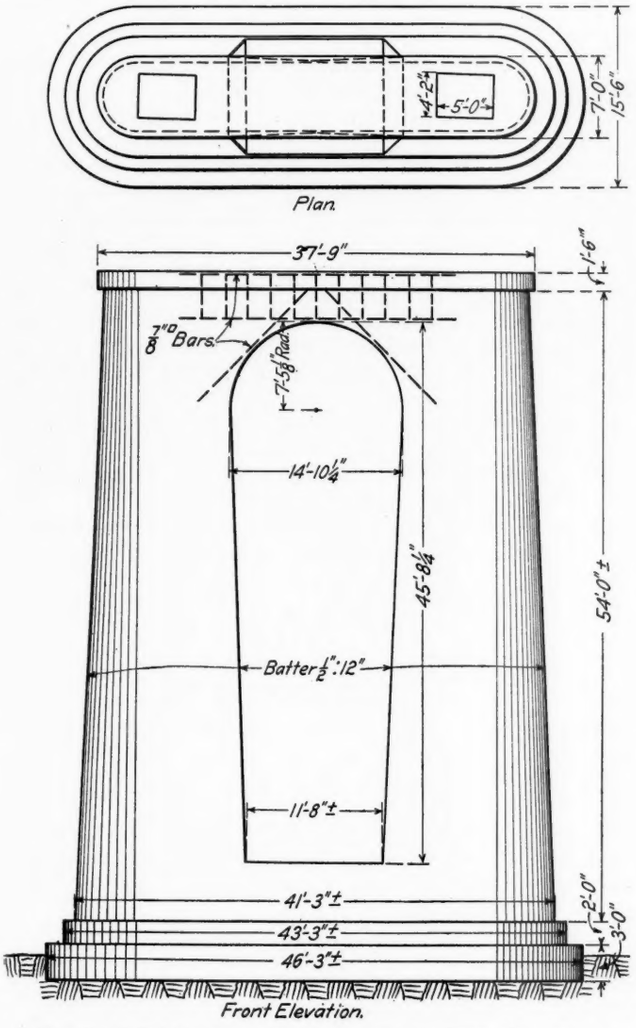
Details of Concrete Viaduct at Cullman, Ala.

COMPANY WORK.

The 12.5 mile section between Athens and Decatur is being handled by company forces. This work consists of a revision of line and grade, most of which is closely adjacent to the operated line and involves some heavy work, complicated by

Cullman Cut Showing Viaducts. **A Typical Piece of Company Work.**

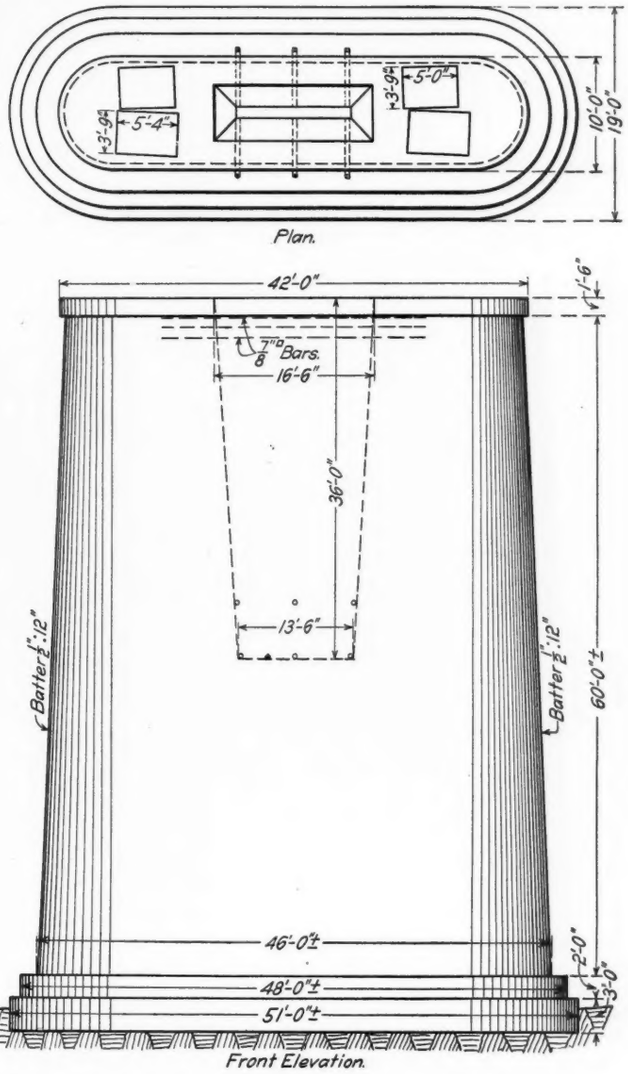
poor material and swampy ground. Bids for this work were received from a number of contractors, but as the prices named seemed high, it was decided to give company work a thorough trial and the purchase of $85,000 worth of equipment was accordingly authorized. The equipment includes an Atlantic



Pier 1 of Bridge Over Mulberry Fork of Warrior River.

type 80-ton shovel, 30 16 yd. Kilbourne & Jacobs automatic air dump cars, a Jordan spreader, a Bucyrus all-steel locomotive pile driver and a No. 12 Smith concrete mixer. In the first 11 months more than $51,000 has been saved over the lowest contract price and it is probable that before the completion of the work the entire cost of the equipment may be saved. Very careful records are being kept of every item of cost to enable the engineer in charge to carry on the work most efficiently and some excellent results are being secured. Last October, which was the record month for the shovel outfit, 55,616 yds. were loaded in 26 days working one 11 hour shift. This is an average per day of 2,139 yds., and on the best day 4,319 yds. were loaded. The material handled was principally clay, some of which is flinty and almost as hard as loose rock. The maximum percentage of loose rock handled in any one month was nearly 50 per cent., although in most months it has been less than 10 per cent.

The equipment in use was specially selected for this work.



Pier 2 of Bridge Over Mulberry Fork of Warrior River.

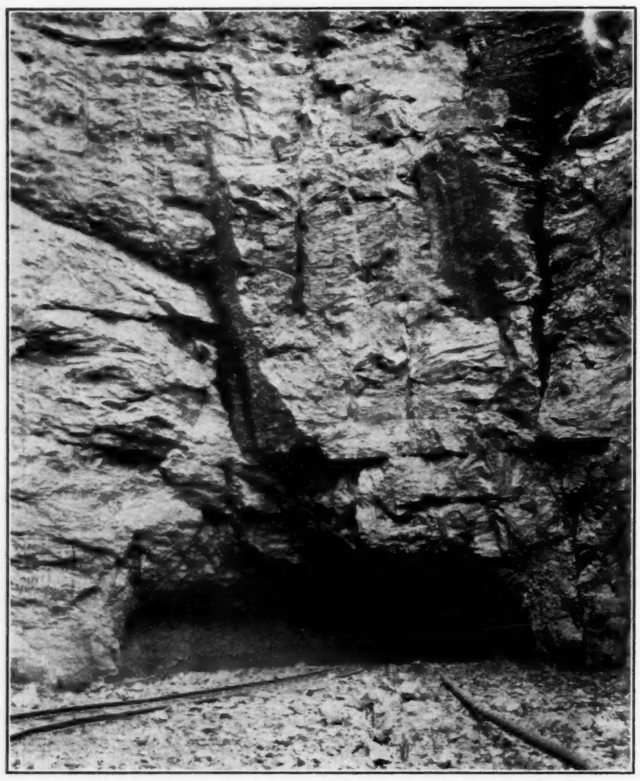
The use of large cars is principally responsible for the high output since they hold about 13 yds. pit measurement, as loaded by the shovel, and they are usually filled by four swings of the 4.5 yd. bucket. From one to four trains are operated, depending on the length of the haul. The maximum haul is about seven miles and the average haul during a month varies from ¾ mile to more than 4 miles. Most of the material is secured from one long cut containing about 385,000 yds. The steam shovel is self-propelling and is equipped with air brakes to enable it to operate safely on steep grades. A special tank car was made from an old engine tender, the rear end of which was fitted up as a shop for making light repairs to the shovel

and other equipment. The tank holds water enough to supply the shovel for a half day's run and is filled twice a day by one of the work train engines. The force employed on the work includes three shovelmen, six pitmen, three train crews, twenty bridgemen building trestles and about 75 laborers changing track and cleaning up cuts.

About three miles of the fill, averaging about 10 ft. high, is being made on a swamp. In places the roadbed width on this fill is being made as much as 40 ft. to insure stability, although the standard is only 31 ft. It has been necessary to build two sections of temporary main line, each about 1.5 miles long, in order to avoid interference to traffic during construction work. Portions of the work which could be handled to the best advantage by a team outfit, were contracted to a local contractor, as the amount of such work would not have warranted the company in equipping for it.

DECATUR-BANGOR SECTION.

For about 20 miles south of Decatur the work is comparatively light, the material being mostly clay with some rock.



Bottom Heading in Rock Tunnel Near Blount Springs.

The new work is close to the old line, the changes in alinement being made to eliminate excessive curvature in a few places. Between Wilhite and Holmes Gap the line strikes a much rougher country and no satisfactory 0.5 line could be laid to reach the higher elevation at Holmes Gap. The old 1.25 per cent. grade was therefore retained for about five miles, the alinement being changed somewhat to eliminate curvature and the grade adjusted slightly to compensate for curvature. The line is benched into solid rock on a steep side hill for most of the distance and follows a small creek for the remainder. In some places retaining walls were necessary to decrease the amount of fill on this side hill, and in other places the creek has been diverted to avoid crossings.

A very difficult problem was presented by a 120 ft. side hill cut on the uphill side of the operated line near the foot of this pusher grade. The material was solid rock down to about 15 ft. above grade and to prevent obstruction to the main track, the blasting had to be handled very carefully. A shovel was operated at an angle with the old line and the blasting was done against a vertical face. By careful work the main line was only blocked 15 min. during the course of the work.

From Holmes Gap, south about 21 miles to Bangor, the country is somewhat easier and a large percentage of the material is clay. On fills along the old line the contractor is required to handle work so as not to disturb the main track, although if he is using standard gage equipment he is allowed to operate over the main line. The operators necessary for blocking trains during such work are furnished and paid by the railway and trainmen are furnished by the road and paid by the contractor.

The new grade through the town of Cullman requires a cut having a maximum depth of 20 ft. As this passes directly through the center of the town it was necessary to build five viaducts to carry streets over the line and to relocate the freight and passenger stations near the grade point. The viaducts are of reinforced concrete providing 28 ft. roadways and two 6 ft. sidewalks, with the exception of one case where the sidewalk is omitted on one side. The viaducts are carried on four bents of two columns each, the three spans being 33 ft. each. The footings are spread as the material is clay, those supporting the end bents being carried down 4 ft. below the ground line and those under the intermediate bents 6 ft. The clearance over the tracks is 22 ft. The columns in each bent are connected by a cross beam, those in the intermediate bents being 5 ft. deep and 15 in. thick, and those in the end bents 4 ft. 3 in. deep and 12 in. thick. In addition to these bents the floor is supported by beams 30 in. thick and 3 ft. 9 in. deep suspended in the middle of each span by steel rods from the concrete girders located over the columns between the roadway and sidewalks. The rods are carried through bearing plates on top of the girders and under the bottom of the beams, the nuts on the ends of the rods being tightened before the removal of the forms and secured in place by cotter pins. They are then painted and covered with a coating of mortar. The roadway slab is 13.5 in. thick, covered with a 6 in. macadam pavement. The sidewalk slab is 6 in. thick, and is supported on brackets cantilevered out from the cross girders. A plain concrete railing 6 in. thick and 3 ft. 9 in. high is provided along the outer edge of each sidewalk.

The viaducts were designed for a live load of 100 lbs. per sq. ft. of roadway and sidewalk, or a 35,000 lb. road roller on the roadway and 100 lbs. per sq. ft. on the sidewalk. Each of the double sidewalk structures required 28 tons of steel and 250 yds. of concrete. Some difficulty was experienced in building these viaducts on account of the necessity of placing practically all of the steel before any concrete was poured, so that the reinforcement in the various parts of the structure could be well interlocked. The columns were all cast up to the floor level, then the steel for the cross beams, floor girders and railing was placed before the floor was poured. A longitudinal and a transverse construction joint were allowed in the floor, the girders and railings being placed in a continuous operation. The concrete was mixed by a ¾-yd. mixer, the plant being shown in one of the illustrations. All concrete was a 1:2:4 mixture.

The new passenger station is of brick with stucco finish, tile roof and terrazzo floors. The freight depot is 50 ft. x 250 ft., with brick walls and wooden roof trusses covered with composition roofing.

One rock cut just north of Garden City containing about 50,000 yds. with an average depth of about 15 ft., occasioned considerable trouble to the contractor on account of the difficulty and expense experienced in getting an explosive that would move the material. It was solid seamless sandstone, so hard that 40 per cent. dynamite charges spaced 6 ft. apart failed even to spring the holes. The contractor secured blasting gelatine, an explosive of much higher power, and had representatives of the Du Pont company examine the material. They advised placing the holes at 4 ft. intervals, which was done, but the material

still failed to break up. Finally the holes were spaced even closer, and it was necessary to shoot them several times. At one time the contractor's accounts showed that this rock had cost $1 a yard for blasting alone.

The new line crosses Mulberry Fork of Warrior river between Garden City and Bangor on a steel viaduct consisting of three 70 ft. and one 35 ft. deck plate girder spans and two 120 ft. and one 150 ft. deck trusses on concrete piers. Two of the piers are of unusual design. They are 60 ft. and 66 ft. high, respectively, and in order to reduce the quantity of concrete, the two designs shown in the drawings were adopted. In one case a hole 11 ft. 8 in. wide at the bottom and 14 ft. 10¼ in. at the top was left in the bed of the pier, extending down to 5 ft. above the top of footings and up to 4 ft. 6 in. below the top of the pier. This design requires 563 cu. yds. for a height of 60 ft., and top dimensions of 30 ft. x 37 ft. 9 in. The other pier has a cavity 36 ft. deep extending down into the center of the pier from the top. This hole is battered from 5 ft. x 16 ft. at the top to 2 ft. x 13 ft. 6 in. at the bottom. Drainage is provided by placing six 3 in. cast iron pipes through the walls of the piers near the bottom of the hole. This design requires 1,155 cu. yds. for a height of 66 ft. and top dimensions of 10 ft. x 42 ft.

Just north of Bangor the new line crosses the old twice on a steep side hill to reach higher ground. At one of these crossings the new line is about 40 ft. above the old, and as the angle of the crossing is very acute, there was a very long section of the new fill which could not be made without encroaching on the old line. It was calculated that 800 ft. of temporary trestle would have been required to make a temporary crossing and put traffic on the new grade. To avoid this expense it was decided to build a temporary line at a grade intermediate between the old and the new lines. To do this the side hill cut between the two crossings was put through at the proper grade, then a single track cut was made as deep as possible in the bottom of the new cut along the upper slope. The elevation reached in this cut was low enough to allow a crossing of the old line to be made on which traffic could be carried temporarily. The cut at the adopted grade of the new line was made wide enough on the down-hill side to allow a double track to be laid adjacent to the temporary single track cut so that after traffic is turned over the temporary single track, allowing the old line to be abandoned, the fill can be brought up across the old line to the new grade and traffic then shifted to a double track laid slightly out of line through the new cut. After this line is in use material can be brought in to fill the excavation made for the temporary single track and the new double track can then be shifted into its proper location.

TUNNEL WORK.

Near Blount Springs there are two tunnels about two miles apart. The shorter one, about 1,000 ft. long, is in very hard rock, most of which is limestone with some ledges of sandstone and slate. No timbering was required during the driving, although it is expected to line the tunnel after its completion. A bottom heading 6 to 8 ft. high extending the full width of the double track tunnel was driven from the north end for the entire length. This heading is shown in one of the photographs. A Marion 41 shovel, operated by air, then started removing the full section from the south end. In shooting down the upper portion of the section, holes were drilled as nearly vertical as possible from the heading up to roof grade. The charges were located in rows of six holes each, the rows being spaced eight ft. apart. Only one row was fired at a time. During the driving of the heading, red paint lines located along the walls of the heading one foot above subgrade and along the roof on the center line were furnished by the engineers for the guidance of the foremen. The contractor was able to make about 50 ft. a week in the heading and about 75 ft. a week in the bench. The muck was hauled from the steam shovel in eight yard cars pulled by narrow gage dinkies burning coke.

The larger tunnel, which is about 2,100 ft. long, was in fairly good rock with the exception of 130 ft. at the north end, where it pierced an old fault. The material encountered at this end was loam and loose rock with many boulders. The method of driving was to put through a center drift, 7 ft. x 16 ft., at about the grade of the springing line without timbering, then enlarge this heading to the full arch section and place the wall plates and arch rings. This tunnel is to be lined with concrete after its completion. When an attempt was made to enlarge the heading in the north end to the full arch section, trouble developed immediately with the soft material. The arch rings were entirely insufficient to sustain the pressure on them. Extra timber consisting of six 8 in. x 8 in. crown bars with 2 in. x 8 in. lagging and 4 in. x 8 in. spacers between the crown bars were placed first and the arch ring timbers were erected inside of this falsework, packing being placed between the falsework and the arch. As there was very little cover over the tunnel at this end a great deal of bracing was required to resist the side pressure of the soft material and a very heavy portal had to be built. The falsework alone required 70,000 ft. of timber in the 130 lineal feet of tunnel section. It was found that the foundation for the wall plates was so soft that they would not support the arch timbers, making it necessary to drive drifts at subgrade on each side and build reinforced concrete footings 2 ft. thick, extending in toward the center line 8 ft. Plumb posts were then set on these footings to carry the wall plates. The south heading was in much better material but as it was started before the approach cut could be taken out, the heading had to be driven down on an incline to reach the proper grade.

The same contractor handled the construction of these two tunnels and rather than build separate compressor plants at each tunnel, involving expensive work in hauling in machinery and coal, he located a 1,000 h. p. compressor plant at Blount Springs on the old line and piped the air to both tunnels. The maximum distance this air was piped was about three miles. A generator was installed at each tunnel to supply current for lights in the tunnels and camps, the generators being driven by air. Air was also used in many other ways about the work, as wherever a mixer or other machine was needed an air motor was installed to operate it.

A special department has been organized to handle this construction work in charge of John Howe Peyton, assistant to the president and chief engineer of construction, assisted by W. E. Smith, superintendent of construction, and H. C. Williams, assistant chief engineer of construction. The structures and buildings involved in the work were designed in the office of the chief engineer, W. H. Courtenay. The division engineers on the work between Madison and Birmingham were W. S. Morton in charge of work between Madison and Lewisburg; Geo. W. Feagin, in charge of work between Lewisburg and Athens; Theo. Speiden, Jr., in charge of company work between Athens and Decatur, and T. Q. Harrison, in charge of work between Decatur and Birmingham. The section between Madison and Decatur was divided into eleven contracts, exclusive of the section handled by company forces, and that between Decatur and Birmingham into fourteen contracts. We are indebted both to the engineering department of the L. & N. and to the numerous contractors on the work for courtesies extended in securing the above information.

CUBAN RAILWAY DEVELOPMENTS.—The Cuban Central Northern Extension Railway, Ltd., has been organized to acquire the interest, right, and title of the Cuban Central Railways, Ltd., in connection with a railway to be built between the ports of Caibarien and Nuevitas, Cuba, including the section of the said railway between Caibarien and Dolores already built and opened for traffic, and the benefit of the work already done on the section between Dolores and Yaguajay; and to build or to continue the construction of the said railway and other lines in Cuba.

BENJAMIN F. BUSH.

Benjamin Franklin Bush has been elected president of the Western Pacific, succeeding E. T. Jeffery, who has been elected chairman of the board, as announced in our news columns last week. Mr. Bush has been president of the Missouri Pacific since May 1, 1911, and also of the Denver & Rio Grande since January 4, 1912. The extension of his jurisdiction over the western line, therefore, places him in direct charge of a system of nearly 11,000 miles, which is about equal to the mileage under the direct charge of Sir Thomas Shaughnessy, of the Canadian Pacific, or that under the direct charge of Mr. Ripley, of the Atchison, Topeka & Santa Fe. As an operating executive Mr. Bush has been rapidly developing toward such a position ever since he took hold of the Missouri Pacific. He was given at that time one of the most difficult tasks ever imposed on a railroad man, that of rehabilitating a railway that, with the greatest possibilities of success, had been allowed to deteriorate while its neighbors were improving. This work was, of course, too big to have been completed in the two years that Mr. Bush has been in charge of the property, but he was able to show some important results in his first year. Not only did the annual report of the Missouri Pacific for the fiscal year 1912 show an increase in revenues and a decrease in operating expenses, and a reduction of 62.18 per cent. in the net corporate loss, but this marked improvement in operating efficiency was effected while carrying on an extensive program of rehabilitation. At the same time Mr. Bush has succeeded in greatly improving the public relations of the road, and this of itself has had an important effect on the upbuilding of its traffic. No report for a full year has been available since he became president of the Denver & Rio Grande, but the improvement in road bed, equipment and business has already been marked, and many important improvements are now under way. Mr. Bush has previously demonstrated his possession of the qualities which the Missouri Pacific needed in his work on the Western Maryland, in which the same interests that control the Missouri Pacific were dominant, and the ability which he showed in building up that property physically and in developing its traffic led to his election to succeed George J. Gould on the Missouri Pacific.

Benjamin F. Bush.

Mr. Bush was born at Wellsboro, Pa., on July 5, 1860, and began his railroad career in 1882 as a rodman on the Northern Pacific. It was only a short time before he was promoted to be locating and division engineer. In 1887 he was made division engineer in Idaho and Oregon for the Union Pacific, and remained with that company for about two years. He resigned in 1889 to become chief engineer and general superintendent of the Oregon Improvement Company. He has, therefore, had a considerable experience on the coast and in the far west. His first connection with the Missouri Pacific was in 1903, when he was appointed fuel agent for the company, with headquarters in St. Louis, and given jurisdiction over all the Gould coal properties in the west and southwest. His work in that position led to his election in 1907 as president of the Western Maryland. His headquarters were changed to Baltimore, but he still retained his connection with the coal properties. When the Western Maryland went into the hands of a receiver, in 1908, he was selected for that position, and was re-elected president when the receivership was ended. While in control of the Western Maryland he entirely rehabilitated that property, and placed it on a sound footing. On May 1, 1911, he was elected president of the Missouri Pacific, with headquarters at St. Louis.

MEDIATION OF TRAINMEN'S DEMANDS.

On Monday Commissioner of Conciliation and Mediation, William Chambers, with Martin A. Knapp and G. W. W. Hanger, met in the forenoon the committee of managers, and in the afternoon the committee representing the trainmen and conductors. L. F. Post, who was appointed, together with Judge Knapp, a member of the board, was found to be ineligible, since his appointment as assistant secretary of labor of the United States had not been confirmed by the United States Senate. Mr. Hanger has the title of assistant, but apparently there is nothing in the law that will prevent the present work of the conciliation board from being carried on under the direction of Mr. Chambers, assisted by Judge Knapp and Mr. Hanger.

One Tuesday and Wednesday conferences between the board and representatives of the managers were again held, as were also conferences between the board and representatives of the brotherhoods. The present efforts of the board are understood to be directed toward getting the managers and representatives of the brotherhoods to agree on what questions shall be submitted for arbitration. Up till Wednesday the trainmen had continued their opposition to any consideration of the eighth question which the managers have been insisting should be arbitrated at the same time as the demands of the trainmen and conductors for increased wages. Before the passage of the Newlands act the Erie had announced that it would not abide by or have any connection with the arbitration meetings. On Tuesday the conductors and trainmen insisted before anything further was done that the Erie should agree to abide by the decision of the award in the arbitration proceedings, and late on Tuesday night General Manager Stuart, of the Erie, notified the board of conciliation and mediation of the willingness of the Erie to abide by the final decision in the case.

Cape to Cairo Railway, Africa.—The wet season has caused a cessation of work on the bridge spanning the Lufira river, thus delaying the opening of the Elizabethville-Kambove section of the Cape to Cairo railway. The telegraph line has been completed to kilometer 137 north of Elizabethville.

GENERAL FOREMEN'S ASSOCIATION.

Closing Sessions Included Reports on Apprenticeship, Shop Schedules, Driving Box Work, and Engine House Efficiency.

An account of the opening exercises and abstracts of the committee reports for the first two days' sessions of the convention of the International Railway General Foremen's Association at the Hotel Sherman, Chicago, were published in last week's issue, page 96. The following reports and papers were considered on Thursday and Friday.

APPRENTICESHIP.

A committee on apprenticeship, consisting of F. W. Thomas, supervisor of apprentices, Atchison, Topeka & Santa Fe, chairman; C. W. Cross, superintendent apprentices, New York Central Lines West, and E. V. Lea, presented a paper including a number of answers to questions sent to 45 representative industrial concerns in the United States in regard to apprenticeship. Twenty-five of these letters were to railroad companies and 20 to other corporations, such as engine builders, electrical manufacturers, etc. Both the railroads and the other corporations stated that the results obtained justified the trouble and expense of educating and training the apprentices. On the railroads 77 per cent. of the graduate apprentices remain in service, while the other corporations have only 56 per cent. Seventy-one per cent. of the boys entering apprentice schools on the railroads complete their courses, while the other corporations have only 65 per cent.

The committee recommends that the question of apprenticeship is worthy of consideration for the reasons that apprentices have proven satisfactory from a commercial standpoint, and that graduate apprentices have in many cases been advanced to positions of authority. The apprentice system is found to be satisfactory in shops employing either the day work or piece work systems. To assure the success of the apprenticeship systems, the following principles seem to be vital, whether the organization is large or small:

First.—To develop from the ranks in the shortest possible time carefully selected young men for the purpose of supplying leading workmen for future needs, with the expectation that those capable of advancement will reveal their ability and take the places in the organization for which they are qualified.

Second.—A competent person must be given the responsibility of the apprenticeship scheme. He must be given adequate authority, and must have sufficient attention from the head of the department. He should conduct thorough shop training of the apprentices, and, in close connection therewith, should develop a scheme of mental training, having necessary assistance in both. The mental training should be compulsory and be conducted during working hours, at the expense of the company.

Third.—Apprentices should be accepted after careful examination by the apprentice instructor.

Fourth.—There should be a probationary period before apprentices are finally accepted; this period to apply to the apprentice term if the candidate is accepted. The scheme should provide for those candidates for apprenticeship who may be better prepared as to education and experience than is expected of the usual candidate.

Fifth.—Suitable records should be kept of the work and standing of apprentices.

Sixth.—Certificates or diplomas should be awarded to those successfully completing the apprentice course. The entire scheme should be planned and administered to give these diplomas the highest possible value.

Seventh.—Rewards in the form of additional education, both manual and mental, should be given apprentices of the highest standing.

Eighth.—It is of the greatest importance that those in charge of apprentices should be most carefully selected. They have the responsibility of preparing the men on whom the roads are to rely in the future. They must be men possessing the necessary ability, coupled with the appreciation of their responsibilities.

Ninth.—Interest in the scheme must begin at the top, and it must be enthusiastically supported by the management.

Tenth.—Apprenticeship should be considered as a recruiting system and the greatest care should be taken to retain graduate apprentices in the service of the company.

Eleventh.—The organization should be such that graduate apprentices can afford to enter for their life work.

In addition to the principles set forth above, the committee urges the necessity of having adequate instructors for the shop and not neglecting this part of the boy's education because of the school room work. While the great value of the school room instruction is recognized, it is believed the one should supplement the other. The principal objection offered by foremen to apprentices in the shops is the time which must be spent with beginners. With adequate shop instruction the foreman is relieved of this. The boy is given assistance as soon as he enters the shop and is made productive at once. It has been demonstrated that where there are 20 apprentices in one trade in a shop the increased output of the boys brought about by a practical instructor will amply justify the employment of a shop instructor.

Discussion.—After reading the paper, F. W. Thomas stated that: "The modern shop offers little advantage for a boy without some one to guide and direct him, for the gang foremen are too busy and have too many other duties to perform to be bothered with green boys. A boy floundering around in a big, modern shop for four years with no kindly hand to help or direct him is what gave the old apprenticeship system a black eye from 1890 to 1905. The apprentice was a failure, for at the end of four years he knew next to nothing of the trade. The Santa Fe said to the general foremen and the foremen: 'We know you haven't the time to pay much attention to these boys; you look out for the output of the shop and your other duties, and we will put a man in the shop whose sole duties will be to look out for the apprentices, who will be responsible to you for the boys' progress and work.' With the present system we have found the boy, with the assistance of his shop instructor, to become productive at once. I believe with Mr. Basford, that the present shops need more such instructors and fewer inspectors. The assistant vice-president on our road, who is responsible for the expenditures in the mechanical department, strongly recommends one shop instructor to each 25 or 30 boys. Such a man will pay for his salary four times over by the better and greater amount of work the boys will be able to do. We are not trying to make mechanical engineers, the colleges furnish these; we are not trying to make draftsmen, the schools furnish these; we want to make first-class skilled mechanics to operate our machines; men who are trained and educated in our ways and our methods, and our standards, whose home and family ties are within our midst."

C. W. Cross, superintendent of apprentices, New York Central Lines West of Buffalo, pointed out the important features to be considered when inaugurating an apprenticeship department. He spoke of the great tendency there was in both the railroads and the manufacturing concerns for making specialists of the men at the loss of the all-around skilled mechanics. The apprentice schools tend to increase the number of skilled men, which in shops, however well specialized, are an absolute necessity. The step that has been taken by the several roads which have established apprentice schools on a comprehensive and broad scale is one of the most important advances that have been made by the railroads in this country for a long time. An apprenticeship system will tend to raise the standard of efficiency among the men. We should not forget to make the proper train-

ing of the young men the first consideration, and the beginning of the value of their service secondary during the first year of their apprenticeship. The best results will be obtained in the end by carrying out this principle. Mr. Cross presented several lantern slides showing various views of apprentice workshops, schools, etc., in both industrial and railroad shops.

C. L. Dickert, assistant master mechanic, Central of Georgia Railway, described the apprentice system in vogue on that road. It was organized under the direction of the educational bureau which handles the class room work only, the shop demonstrator being directly under the control of the local shop organization. The apprentices are required to attend classes of half an hour duration each day. It was deemed advisable to hold the boy in the class room only half an hour, as he does not get tired of the class room instruction in that time, and it gives an opportunity for smaller classes, which allow almost individual instruction.

SHOP SCHEDULES.

Henry Gardner, superintendent of apprentices, New York Central Lines East of Buffalo, described the schedule system in operation at the West Albany shops of the New York Central & Hudson River. This application of scheduling and routing the work is simple and flexible, being maintained by the regular shop force. Every feature of the work is fully under the jurisdiction of the local shop management, and is now regarded as almost indispensable by the shop foremen. A careful study has been made of the manufacture of the different parts required on the locomotive so that when an engine enters the shop for repairs a list of the work to be done is made, and the time is allotted for repairing each individual part, so that by adding up the total time a definite and positive date can be set for the engine to be ready for service. These parts are then scheduled to the different shops and gangs, according to the routing system of the shop, and a definite day is set for each part to be completed. A blackboard is provided for each class of work so the workmen may know just when parts for each engine must be completed. The general foreman is provided with a schedule showing just what work is to be finished each day, and is also kept informed as to the delays and the reasons therefor. In this way he is kept in absolute touch with all the work passing through the shop with the least amount of trouble, and is ready to concentrate his efforts at the place most needed. This system has been in effect for over 15 months with many beneficial results. The work of the shops is better balanced, each department is better organized, and there is better co-operation between the different departments. The system works as successfully with piece work as with day work. The foremen know a great deal better just what work is being done and just where to place the blame for any hitch that may occur in carrying out the system. A detailed description of this work was given in the *Railway Age Gazette* of September 20, 1912.

The report of the committee on this subject, of which L. A. North, general foreman, Illinois Central, was chairman, strongly advocated the introduction of shop schedules. The aim of the majority of the railway shops is to turn out the largest amount of work in the shortest possible time, and this can be done by the adoption of a fair and comprehensive shop schedule.

Discussion.—This paper was thoroughly discussed from the shop standpoint; men laying off was mentioned as the greatest difficulty met in the operation of such a schedule. But it was pointed out that this could be allowed for to some extent by allotting a little more time to each schedule than was absolutely necessary.

DRIVING BOXES.

There were three papers on this subject, which went into the care and maintenance of driving boxes in a thorough manner. George H. Logan, general foreman, Chicago & North Western, Missouri Valley, Ia., also chairman of the committee on this subject, presented a paper which was most complete in its scope. He stated that the driving box and its component parts when properly machined, assembled and taken care of, give the engine crew and roundhouse foreman but little engine trouble, and prolong the time between engine shoppings to a considerable extent. If the driving box and its parts are not properly taken care of trouble will undoubtedly be experienced from the breaking of frames, rods, rod straps, crank pins, crosshead keys, pedestals, binders, deck and cylinder bolts, excessive wear on the rod bushings and brasses, the loosening of the wrist pin bearing in the crosshead and the spider fit on the piston rod, and, if a Stephenson motion is used, the distortion of the valve gear.

There are many foremen who have allowed or even performed makeshift repairs simply to get the engine out on the road and win the good will of the chief train despatcher or of the division superintendent, but by doing so they sacrifice the earning power and life of an engine in the long run. When an engine fails on the road the superintendent will surely make an investigation, and may even ask, "What discipline was administered to the responsible party?", the guilty foreman then answering for his previous carelessness. When defects are discovered arrangements should be made for a relief engine and the repairs should be promptly and carefully made. Driving boxes, finished except for the boring of the journal and the facing of the hub side, and with the shoes and wedges finished, except the face, should be carried in storehouse stock so that prompt repairs may be made at any shops on the system. On the North Western the boxes made for such stock are usually machined in lots of 12 and distributed as necessary to outlying points. A shop of any considerable size should have its machine tools specially arranged for driving box work.

Mr. Logan strongly emphasized the necessity of doing all the work well, stating that the "good enough" habit which has become so prevalent in railroad shops, has made many an engine a shop candidate while undergoing repairs. Driving boxes and their parts are vitally essential and the repairs should be thoroughly made.

He also described the Markel driving box, designed and patented by Charles Markel, machine shop foreman of the C. & N. W., at Clinton, Ia. With this driving box a front brass on an Atlantic type engine may be removed and a new one applied in three hours. The main brass on the same type of engine provided with the Stephenson link motion, which requires the moving of the eccentrics, may be removed and renewed in from five to six hours. He also mentioned the Markel removable hub plates, of which there are quite a number in use on the North Western. With them the lateral wear on a pair of drivers may be taken up in 1½ hours. Mr. Logan also went thoroughly into the shop practice of performing the various repairs on the driving box and its component parts.

C. L. Dickert, assistant master mechanic of the Central of Georgia, at Macon, Ga., also a member of the committee, presented another paper on this subject, describing each operation in the handling of driving boxes from the rough to the finished box applied to the journal. In speaking of the comparing of shops he called attention to the wide difference in the shop conditions. A small shop with old machinery can hardly be compared with a large, modern shop fully equipped with the latest tools. In the handling of a shop the first and most important step is to perfect the organization. Have a system of handling the work from one machine to the other, and keep regular men on the machines, if possible.

C. N. Newman, general foreman, Atlantic Coast Lines, Rocky Mount, N. C., also a member of the committee, presented a paper which was divided under the following heads: Method of machining driving boxes, shoes and wedges; an economical machine grouping for this work; a good method for fitting up shoes, wedges, and boxes and squaring the engine; methods of rebuilding wearing surfaces.

He called attention to the importance of the driving box with its shoes and wedges in prolonging the life of a locomotive, stating that the running repairs of these parts on the average locomotive are due to improper methods and poor workmanship

on them while the engine is in the shop for general repairs, and that such treatment holds the engine out of service longer and costs more than the repairs to almost any other part of the machine.

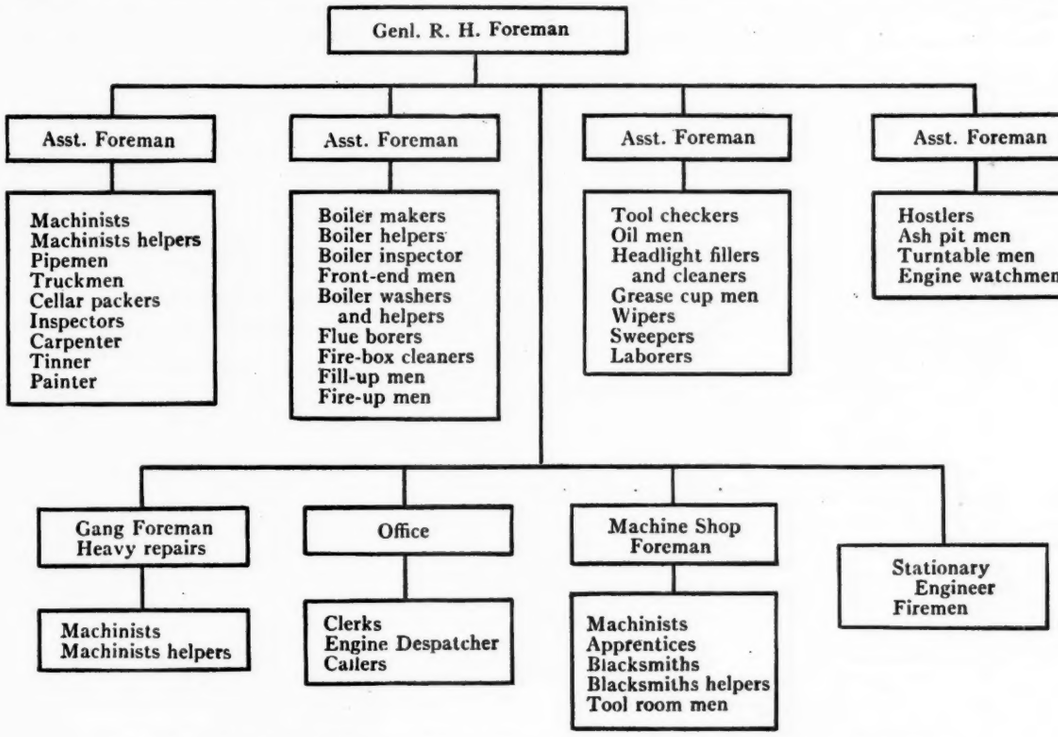
Discussion.—The necessity of careful maintenance of the driving box and its component parts was clearly brought out in the discussion. Wide journal boxes were spoken of as giving most excellent results and greatly reducing the trouble formerly experienced on heavy power. On the Delaware, Lackawanna & Western a special organization is maintained for the caring of driving boxes. The road has educated its engineers to carefully watch this part of the locomotive and repair the slightest defects.

ENGINE HOUSE EFFICIENCY.

William Smith, roundhouse foreman of the Chicago & North Western, at Boone, Iowa, pointed out in his paper that an efficient engine house will give a correspondingly good engine performance. There are many conditions that have a bearing on this subject, which make it more or less complicated. Roundhouse men should be consulted on locomotive design, in regard to the location and design of parts that have proven inaccessible and unreliable. For instance, it would be a great improvement to provide boiler checks with shut-off valves in such a position that the checks may be reground with the engines under steam. In order to compare the relative efficiency of engine houses, the following items should be considered: Cost of engine repairs per mile; cost of handling per engine; mileage per engine failure; mileage between general repairs; average time of engine detention, and the per cent. of the total number of engines despatched, which are furnished on time.

The aim of the engine house management should be to so maintain the power as to make the greatest possible mileage between shoppings and engine failures, to minimize the time out of service due to handling and repairs, to keep the cost of handling and repairs down to the lowest possible figure, and lastly to furnish engines on time. The foreman is in a position to know what kind of material is needed on certain engines, and either he or his assistant should write out all requisitions for such material. Care should be taken to see that all scrapped fittings having any intrinsic value are returned to the storehouse in exchange for new material. The stock in the storeroom should be carefully studied, as there is nothing that will decrease the efficiency of an engine house so much as not having the proper material at hand.

As engine failures are controlled to a large extent by the human element in the organization, care should be taken that proper discipline is maintained. Every opportunity should be grasped to decrease the number of failures, and each failure should be reported and promptly investigated so as to place the blame where it belongs. It is suggested that a daily report of failures on each division should be posted in a place where all may see them, as this would tend to create a feeling of rivalry between the men concerning the operation of their engines. Various devices may be applied to locomotives which will prevent engine failures, and an engineer notified as to the trouble he may expect from his engine, will be able to watch for that trouble, and in many cases prevent engine failures. Careful, thorough periodical examinations and tests should be given all engines, and all adjustments and repairs should be thoroughly and quickly made. Although it costs money to hold an engine out of service, it may cost more later if engines run without necessary repairs.



Engine House Organization Where Engines Handled Are Largely of One Class.

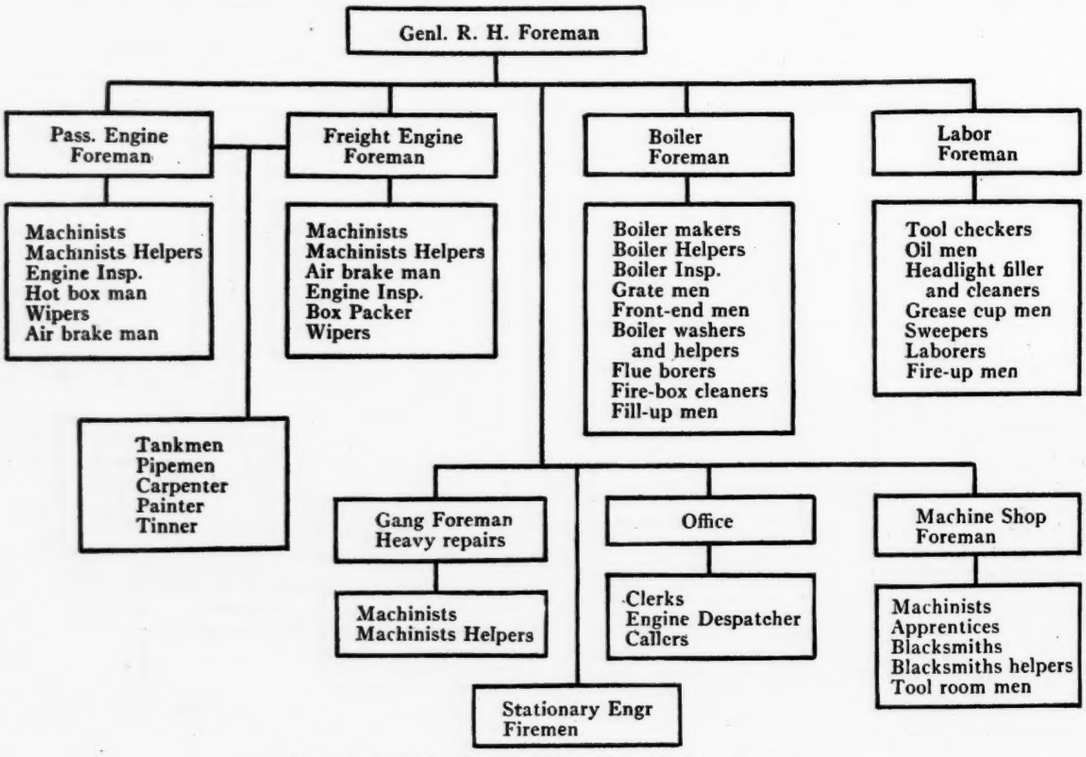
A terminal daily report is recommended, giving the time of arrival of each engine at the ash pit, the time in the engine house, the time the engine is ready for service, the time used in preparing the engine, the time ordered, the time out of the house, the total terminal delay, and the cause of any unusual delay. This should be furnished the division superintendent and the master mechanic.

It is essential that an engine house have a good, effective organization. The foreman should be free to see that things are running smoothly, and not entailed with too much detail work. The accompanying diagram show two plans of organization. One is for the engine house which handles engines mostly of one class, either freight or passenger. The second is for the large main line engine house, handling both freight and passenger engines. Both of these organizations are intended for engine houses segregated from the back shop.

The operating board is quite essential for keeping track of the

work done on an engine. Other boards located at various places throughout the engine house should be used to give necessary information to the roundhouse men concerning the engines in the house. A running log, or information book, should be maintained at each engine house to keep the day and night foreman informed as to the progress of the work in the previous shift.

Careful inspection is especially necessary to obtain the most satisfactory results. Some roads have provided inspection pits on the incoming tracks where the engines are inspected as soon as they reach the terminal and before the engineer leaves. This is of a distinct advantage as the work of repairing may be started at the earliest possible moment. These inspectors are called upon to make minor repairs, such as tightening nuts, etc., or else are furnished with assistants for doing this work.



Organization for Large Main Line Engine House.

Ordinary running repairs should be carefully noted on written reports by the engineer and inspectors, and some good system should be used to take care of the incomplete work reports so that the work may be followed up and finished as soon as possible. The work report books should be accessible to the enginemen so that they may know what has been done to their engines while in the roundhouse.

Care should be taken that sufficient instructions are posted or given to the engineers in regard to the use of new appliances. This will oftentimes prevent an engine failure and allow the engineer to obtain the best use of the device. The engine house should have every facility, such as a good turntable, drop pits, toolroom, and proper equipment to aid the workmen in the performance of their duties. Oftentimes considerable rush work, although important, has to be done at the engine house and every facility should be had for making this work a permanent job instead of only a temporary makeshift.

The engine house should be kept clean, well lighted and well ventilated, in order to get the best service from the workmen. Whitewashed walls brighten up an engine house to very good advantage. Too much stress cannot be placed upon the importance of properly maintaining all the equipment, and every provision for safety should be made, for even when the conditions are the best there are more or less dangers connected with engine house work.

OTHER BUSINESS.

E. W. Pratt, assistant superintendent motive power, Chicago & North Western, gave a short talk at the Friday morning session. The members took a trip through the Chicago avenue shops of the Chicago & North Western Thursday afternoon. It was voted to have the topic on engine house efficiency continued for another year.

The following officers were elected for the ensuing year: President, W. W. Scott, general foreman, Delaware, Lackawanna & Western; first vice-president, T. F. Griffin, general foreman, Cleveland, Cincinnati, Chicago & St. Louis; second vice-president, L. A. North, shop superintendent, Illinois Central; third vice-president, William Smith, Delaware & Hudson; fourth vice-president, W. T. Gale, machine shop foreman, Chicago & North Western; secretary-treasurer, William Hall, general foreman, Chicago & North Western.

Spanish Railway Sold.—The purchase of the Bobadilla-Algeciras Railway by the Andaluces Company will have an important effect on the Spanish railway operations and development. The 110 mile Bobadilla-Algeciras line runs from Algeciras across the bay of that name from Gibraltar to Bobadilla. Traffic between any two of the cities of Algeciras, Seville, Cordoba, Jaen, Granada and Malaga passes through Bobadilla, and passengers and freight between the ports of Gibraltar and Algeciras and the interior of Spain must use the Algeciras-Bobadilla line. The Andaluces Company, which is controlled by French interests, is the principal railway system in the south of Spain. It has 672 miles trackage, its main lines connecting the principal cities of the south of Spain—Malaga, Granada, Jaen, Cordoba, Seville and Cadiz. The gross receipts of the road from January 1 to September 20, 1912, were $3,500,000, as compared to $3,053,000 for the same period of 1911. In 1911 it carried 3,603,292 passengers and 1,828,330 tons of slow freight, receiving from the former $1,326,828, and from the latter $2,677,923, besides $366,970 from merchandise carried by fast freight, and $94,985 from sundry sources not specified. In 1911 the total income of the road amounted to $3,657 per mile, and total expenses to $2,188 per mile.

THE BOARD OF CONCILIATION AND MEDIATION.

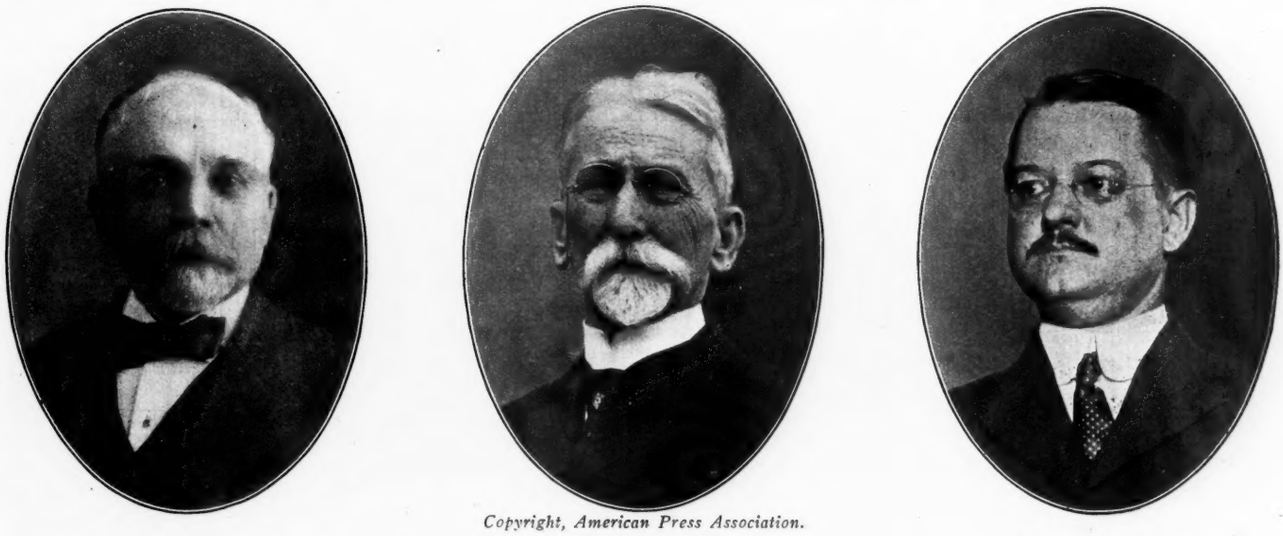
William L. Chambers has been appointed by President Wilson and confirmed by the Senate as commissioner of conciliation and mediation in accordance with the provisions of the Newlands law providing for the arbitration of controversies between employees of railroad companies and their employers. Martin A. Knapp has been appointed one of the two members of the board and has been confirmed by the Senate, and G. W. W. Hanger has been appointed an assistant commissioner and has been confirmed by the Senate. L. F. Post was appointed by President Wilson as the second member to act with Mr. Knapp, but it was found that he was ineligible, since his appointment as assistant secretary of labor had not been confirmed and therefore he was not an employee of the government within the meaning of the Newlands act.

W. L. Chambers was born in 1852 at Columbus, Ga. He attended Emory College and later received the degree of LL. D. from that college in 1909. He taught school for two years and was admitted to the bar in 1873. He was president of the First National Bank of Montgomery, Ala., in 1888, and was president of the company which founded the town of Sheffield, Ala. His home since that time has been Sheffield, Ala., which is now next to Birmingham, the largest iron producing city of the South. Judge Chambers was the American member of the commission which in 1890 negotiated the Berlin treaty between England, Germany and the United States, and in 1897 was appointed chief justice of the International Court at Samoa, serving until 1901. Since 1901 he has been a member of the Spanish Treaty Claims Commission and is a member of the Alabama Historical Society and other scientific societies, and was the chairman of the board of arbitrators which, under the Erdman Act, passed upon the railroad firemen's claims for increased wages and changed working conditions in the early part of this year.

Martin A. Knapp was born in 1843 at Spafford, N. Y. He graduated from Wesleyan University with the degree of A.B. in 1868 and received his A.M. in 1871, and received the honorary degree of A.M. from Syracuse in 1892. He was admitted to the bar of New York in 1869 and served as corporation counsel for the city of Syracuse from 1877 to 1883. In February, 1891, President Harrison appointed Mr. Knapp a member of the Interstate Commerce Commission. He was reappointed by President Cleveland in 1897 and again by President Roosevelt in 1902 and 1908, and was chairman of the commission from 1898 until 1912, when he was appointed by President Taft as chief justice of the newly created Commerce Court.

Louis F. Post, who was President Wilson's choice for the second member, was editor of *The Public*, a weekly paper devoted to politics, municipal and social reforms, and especially to the interests of organized labor in Chicago and the advocation of the single tax.

G. W. W. Hanger has been chief statistician of the Bureau of Labor Statistics.



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M. A Knapp. W. L. Chambers. G. W. W. Hanger.

THE COMMISSIONER OF MEDIATION AND THE TWO MEMBERS OF THE BOARD.

A DAY'S TRAIN RECORD OVER TEHACHAPI MOUNTAIN.

On January 19 last the movement of trains over the Southern Pacific between Bakersfield, Cal., and Mojave, 67.8 miles, a difficult single track line, was the heaviest on record for that section—36 trains, 996 cars; and the successful accomplishment of the day's work without mishap makes the despatcher's sheet worth putting on record; it is given in graphic form on the opposite page. Heavy lines indicate passenger trains and light lines freight trains and engines (helping engines going down hill) without trains.

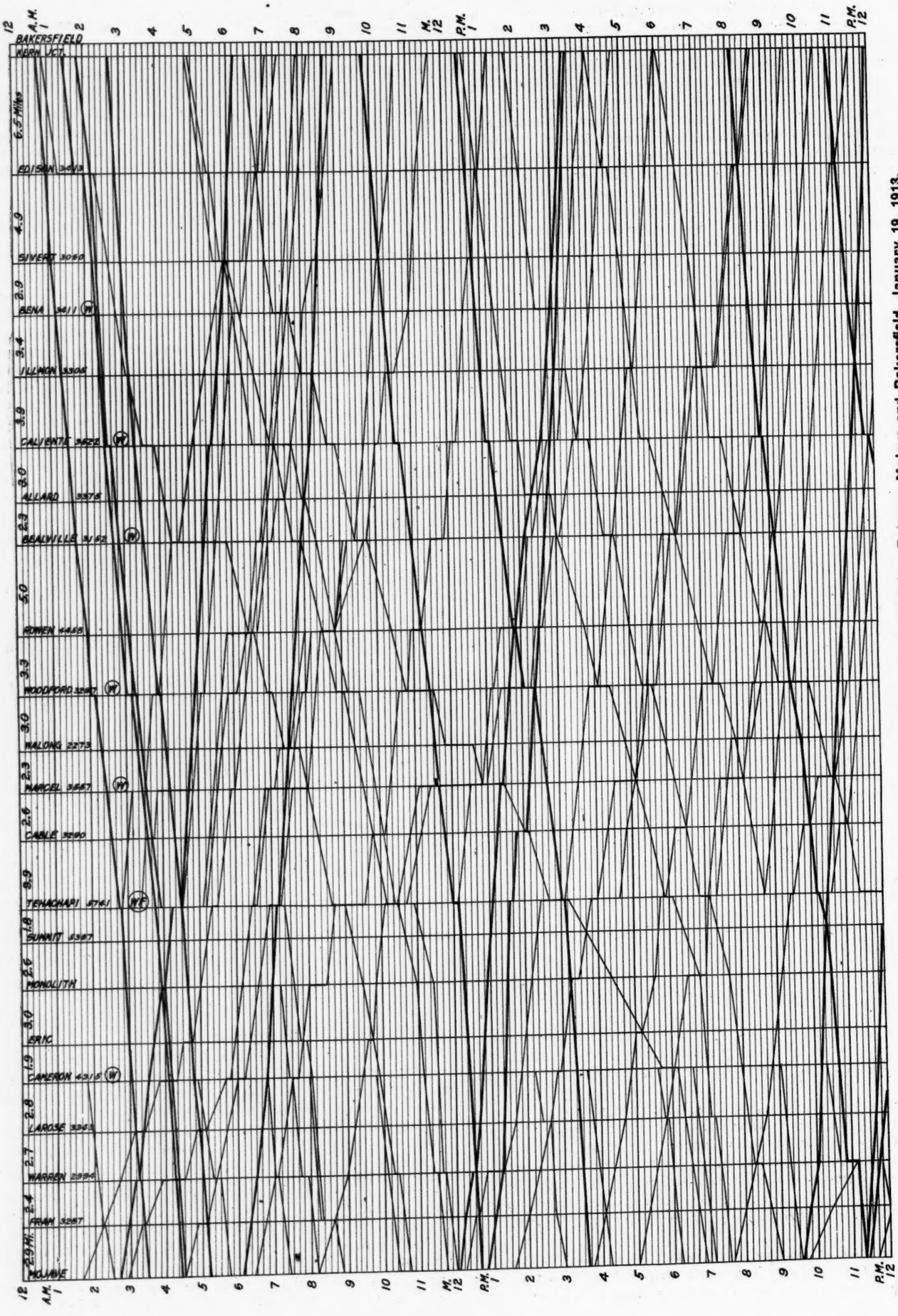
The line between Bakersfield and Mojave, over the Tehachapi mountains, is operated under severe conditions. This road is owned by the Southern Pacific company, and is used jointly by the Southern Pacific Company and the Atchison, Topeka & Santa Fe.

This line is single track, constructed through heavy mountainous country. The maximum grade is 2.2 per cent. uncompensated east and west of the summit with maximum 10 deg. 20 min. curvature, all curves being tapered on each end, with standard Southern Pacific spiral.

From Caliente to Tehachapi, a distance of 25 miles, on the west side of the pass, the grade is very regular and averages 2 per cent. on the east side, from Mojave to Cameron for nine miles there is a 2.2 per cent. grade, and from Cameron to Summit it is 1 per cent.

The track is laid with 90-lb. rail of A. R. A. section, with treated pine ties, fully tie plated. The line for the entire distance is fully equipped with automatic block signals. There are 18 tunnels, with a total length of 8,115 ft., and 3,990 lineal feet of trestle and steel bridges. The greater portion of the bridging is west of Tehachapi.

A unique engineering feature exists on this line at Walong, nine miles west of Tehachapi, where the road makes a complete loop. For a considerable distance on the west side of the



Movement of Trains Over Southern Pacific Railroad, San Joaquin Division, Between Mojave and Bakersfield, January 19, 1913.

mountains, the line parallels very closely Tehachapi creek. Owing to topographic conditions at Walong, it was impossible to construct within the allowable grade. A conical hill exists at this point, and by completely encircling it, the desired grade was obtained. The lower portion of the loop passes under the upper portion by means of a tunnel. The curvature required in this one curve is 566 deg. 33 min., the degree of curve is varying, but the principal complete circle is practically 10 deg. throughout. The distance traversed from the point in the tunnel to the point of crossing above is 3,790 ft., gaining 77.3 ft. in elevation in this distance.

On account of the heavy curvature and grades on the mountain portion as well as the heavy locomotives used on this line, the maximum speed of freight trains is limited to 18 miles an hour, and of passenger trains to 30 miles an hour, both ways.

Helpers are used between Bakersfield and Summit, on the west side of the mountain, a distance of 50 miles, and on the east side, between Mojave and Eric, 13 miles. Tonnage rating of the Mallet type of engines eastward, Bakersfield to Summit, is 1,085 tons, and that of the consolidation engines 450 tons; westward the Mallets are rated at 1,250 tons, and consolidations 505 tons. Freight trains are run with two Mallets or one Mallet and two consolidations, or four consolidations. Passenger trains with six cars or more have helpers, which are returned to their terminals, Bakersfield or Mojave, after helping a train up, the officers feeling assured from experience, that this is the most economical manner of operation. The greater portion of the year the preponderance of traffic is eastward, due, principally, to the production of oil, which is loaded in the Coalinga, Sunset and Kern river fields in the vicinity of Bakersfield and assembled at that point for eastward movement. At this time the oil fields are very active, due to the increasing demand for oil for fuel. In addition to the oil traffic, during the fruit season, oranges and other fruits from the Porterville district move in train load lots over this district. A schedule of five hours and thirty minutes is maintained by eastward, and four hours and thirty minutes by westward trains carrying high class lading. There is also a liberal movement of livestock in its season.

With a view of giving preference to freight trains ascending the mountain, and to prevent their being stopped unnecessarily with resultant damage and delays on account of break-in-twos in starting, the schedules are so arranged on the time table and the time so distributed that they are able to make the schedules with the full loads. Schedules are spaced on the time table and trains run in sections in such a manner as to distribute the movement fairly over the 24-hour period. Schedules of these trains are so arranged that all trains ascending are superior from starting point to the summit.

These schedules were arranged as a result of a number of tests and observations, confirmed by statistics of train movements compiled by the division operating officers. The different kinds of locomotives used during the heavy business portion of the season made it a difficult problem to figure out a tonnage rating consistent with economical operation, without underloading or overloading the locomotives while still maintaining the rate of ten miles an hour ascending the mountain.

Failure of trains to make schedule time on this busy stretch of track results in congestions, necessitating saw-bys, attended by serious delays to trains following as well as increasing the amount of overtime.

Physical conditions forbid the construction of side tracks of sufficient length and the car limit of freight trains is sixty cars, and as a further precaution against congestions, there is a rule that between 7 p. m. and 3 a. m., when passenger trains are frequent, westward freights shall be limited to 40 cars, the capacity of three of the sidings on the descending grade; and the freights are spaced from one to two hours apart leaving terminals.

The train movement over this busy section is further facilitated by the use of telephones in despatching, one set of trick despatchers handling the 68 miles. As many as 104 train orders have been sent over the telephone by one despatcher during an eight-hour trick.

The track being protected by automatic block signals, Form 19 is used for train orders which restricts the superiority of trains. Operators fill out a clearance card showing the numbers of the orders for delivery to a certain train and repeat it to the despatcher. The despatcher then gives O. K. and time, which is shown on the clearance. The orders, together with the clearance, are handed to engineers and to conductors without stopping the train.

These features of train movement have been great time savers and a uniform and expeditious movement is carried out successfully. The volume of traffic, for a single track railroad is large and, barring accidents, but few of the trainmen have to be paid overtime.

On January 19, as before stated, the previous record of 978 cars moved over this mountain was broken by the movement of sixteen passenger trains handling 110 passenger cars, 6,305 tons, and 20 freight trains, handling 886 cars, 30,725 tons, a total of 36 trains, 996 cars, 37,030 tons, requiring 137 engines. Seventy-two engine movements were made, or one movement every twenty minutes during the twenty-four hour period. This includes the returning helpers. One hundred and eighty-three train orders were required in the handling of the day's business, or one about every 8 minutes. Schedule trains were moved on time and the entire movement in complete safety.

The following engines are in use by the Southern Pacific over this mountain:

Passenger service; mogul type. Cylinders, 21 in. x 28 in.; diameter of drivers, 63 in.; weight on drivers, 144,120 lbs.; total weight, 166,320 lbs.; heating surface, 2,339 sq. ft.; tractive effort, 33,320 lbs.; these engines use saturated steam. The tenders of the rectangular type carry 6,000 gals. of water and 2,900 gals. oil.

Helpers are used both in passenger and through freight service—these are consolidation type; cylinders, 22 in. x 30 in.; diameter of drivers, 57 in.; weight on drivers, 187,000 lbs.; total weight, 208,000 lbs.; heating surface, 3,403 sq. ft.; tractive effort, 43,305 lbs.; saturated steam. The tenders are of the cylindrical type; water capacity, 7,000 gals.; oil, 3,300 gals.

For freight service Mallet locomotives are used with cylinders 26 in. and 40 in. x 30 in.; diameter of drivers, 57 in.; weight on drivers, 401,000 lbs.; total weight, 435,800 lbs.; heating surface, 6,394 sq. ft.; tractive effort, 94,880 lbs.; superheated steam. The tenders are of the semi-cylindrical type; water capacity, 10,000 gals.; oil, 3,300 gals.

In the diagram the day begins at the top; the left hand is east and the right hand west. The figures against the stations, as, for example, "Edison 3413," "Fram 3287," show the length in feet of passing tracks. The letter W indicates water stations; and F fuel stations.

Starting from Mojave the grade ascends at about 106 ft. per mile to Eric; then at about 55 ft. to the summit; thence down 51 ft. per mile to Tehachapi; thence down at about 106 ft. to Illmon, and the rest of the way at rates varying from 74 ft. per mile to 60 ft. The summit is 4,025 ft. above sea level.

SURVEYS FOR RAILWAYS IN COLOMBIA.—The Colombian government has named a commission of engineers to make the preliminary survey of the route of the railway recently provided for by congress from the Department of North Santander to the Magdalena river, consisting of Drs. Fabio Gonzalez, Salvador Uribe and Carlos Julio Canal. The commission will begin work at once.

NARROW-GAGE LINE FOR SPAIN.—The concession and construction of a narrow-gage railway from the station of Las Arenas to the quarry of Neguri, province of Vizcaya, has been awarded to La Compañia de los Ferrocarriles de Santander á Bilbao. The rolling stock of this road must comprise at least 1 engine, 1 first class passenger car, 1 first and second class passenger car, and 6 flat cars. The estimated cost of the line is $32,400.

TOOL FOREMEN'S ASSOCIATION.

The fifth annual convention of the American Railway Tool Foremen's Association was held at the Hotel Sherman, Chicago, July 22-24. J. Martin, tool foreman of the Cleveland, Cincinnati, Chicago & St. Louis at Indianapolis, Ind., presided. The opening address was made by E. W. Pratt, assistant superintendent motive power and machinery of the Chicago & North Western. He laid special stress on the great importance to a shop plant of a well equipped tool room whose function it is to keep all of the tools in good condition.

President Martin, in his address, emphasized the importance of operating the tool room in an efficient manner, and particularly in the handling of scrap tool steel. The work of the tool room affects the efficiency of the entire shop and the foreman should not only see that the tools are maintained in proper condition, but should study the shop operations with a view of devising new tools to do the work in a shorter time.

RECLAMATION OF SCRAP TOOL STEEL.

J. J. Sheehan, Norfolk & Western, Roanoke, Va., chairman of the committee on this subject, pointed out that care must be taken in using scrap tool steel in order that the cost of reclaiming does not exceed the cost of the new material; but where opportunity is offered the discarded tool steel could be reclaimed to good advantage. As an example, he cited several cases, as follows: Out of 6,500 lbs. of tool steel purchased at a cost of 50 cents a pound, it was found that the scrap amounted to 2,600 lbs., which, if it could be worked over, would represent a saving of some $1,300. As tools become too short or are unfit for further service they are sent to the smith shop, reheated and forged down to smaller sizes. From 600 lbs. of scrap steel thus treated, 500 lbs. of serviceable tools were delivered to the tool room at a cost of five cents a pound, showing a saving of $225. Out of 315 lbs. of cutters for the Davis boring bars for 7 in. bore, 250 lbs. of scrap steel were annealed and redressed for 6½ in. cutters for boring bars of the same make, representing a saving of $112.50. In the same way the 6½ in. cutters were again redressed for 6 in. cutters. Similar savings may be made in chaser dies, taps, reamers, punches, punch dies, rivet sets, flue expander pins, etc. By pursuing a systematic recovery of scrap tool steel, and having a scheme of utilizing the material in small sizes and shapes, a saving may be effected which is well worth the time and attention required.

E. R. Purchase, Boston & Albany, Springfield, Mass., also a member of the committee, stated that on that road they take the largest wheel lathe tools of high speed steel and keep drawing them down until they are ⅜ in. or ½ in. square, for use in tool holders.

A. R. Davis, Central of Georgia, Macon, Ga., stated that the design of tools has much to do with their reclaiming when they are worn to the limit. This applies to milling cutters, reamers and taps. Those with the wide, shallow flutes may be recut easily with the same number of flutes by using a fluting cutter of decreased angle. Punches for the boiler shop, that may be reclaimed by reducing their diameter 1/16 in., are ground, while those requiring more stock to be removed are annealed and turned. The accompanying table shows the cost of reclaiming tools in general use, the overhead charges not being included.

RECLAIMING SCRAP TOOLS.

Taps.

	Mt'l.	Price per lb.	Reclaim cost	Per cent. salvage
Std. and taper boiler, 1 in. up—cut shanks...	110C.	$0.17	$0.03	82
Staybolt—cut shanks for small reamers and taps	100C.	.17	.03	82
Flexible staybolt—turn to smaller tools.....	110C.	.17	.04	76
Pipe and special—turn to smaller tools.....	110C.	.17	.04	76
Machine—cut shanks for smaller reamers and taps	H.S.S.	.55	.03	94½
	100C.	.17	.03	81

Reamers.

	Mt'l.	Price per lb.	Reclaim cost	Per cent. salvage
Straight and taper, hand—recut 1 in.....	100C.	2.50	1.25	50
Straight and taper, hand—turn to stock.....	100C.	.17	.04	76
Rosebits—recut and use shanks for end mills,	.....	3.90	.70	82
Rosebits—turn to stock	H.S.S.	.55	.031	94½
Special—turn to stock	H.S.S.	.55	.03	94½
Inserted blades—draw to tool holder stock...	H.S.S.	.55	.08	85½
Drills.				
Twist, No. 3 shank—draw stock.....	H.S.S.	.55	.06	89
Forged twisted—draw stock and counterbore blades	H.S.S.	.55	.04	92½
Special—draw stock	H.S.S.	.55	.06	89
Milling Cutters.				
Broken cutters—trim and draw stock (poor stock)	H.S.S.	.55	.08	85½
Slabbing, 3 in. to 5 in.—recut, average per 1 in. face	H.S.S.	4.55	.78	83
Straddle, 5 in. x 1 in.—recut.....	H.S.S.	8.30	1.95	76½
Keyway, 4½ in. x 1 in.—recut.....	H.S.S.	7.10	1.20	83
End mills—draw shanks	H.S.S.	.55	.06	89
End mills—recut 1 in. in diameter.....	H.S.S.	2.67	.85	68
Inserted blades—draw stock	H.S.S.	.55	.08	85½
Boiler Tools.				
Punches—turn or grind.....	90C.	.32	.06	81
Punch dies—rebore	90C.	.38	.11	71
Shear blades—draw stock	90C.	.17	.02	90
Rivet sets (large)—recup.....	Van.	.92	.16	82½
General hand tools—draw stock.....	75C.	.15	.03	80
Pneumatic blank—to hand	Van.	.17	.03	82
Machine Tools.				
Standard tool stock—draw to sizes.....	H.S.S.	.55	.02	96½
Tire scrapers, etc.—cut and draw to 6 in. x 12 in.	H.S.S.	.55	.08	85½
Bolt turning blades—cut to short lengths....	H.S.S.	..	..	..
Bolt turning blades—draw to tool stock.....	H.S.S.	.55	.06	89
Counterbore blades—draw stock	H.S.S.	.55	.08	85½
Bolt cutter dies—rehob, 1 in. average.....	H.S.S.	3.90	.80	79
Bolt cutter dies—draw stock.....	H.S.S.	.55	.06	89
Wood machine tools—draw stock.....	100C.	.17	.03	94½
Forging Tools.				
Drop die blocks—plane for stock.....	75C.	.17	.02½	85
Flue dies—rebore	Van.	6.85	.60	91
Flue dies—draw stock	Van.	.17	.04	76
Stripper plates—draw stock	90C.	.17	.03	94½
Hand tools—dress to small sizes.....	75C.	.15	.04	80

TOOLS NOT RECLAIMED.

Small drills, taps and reamers.
Spindle stay taps.
Three-flue stock.
Small milling and all form cutters.

Discussion.—The discussion clearly brought out the importance and possibilities of reclaiming or remaking the scrap tool steel into other tools. J. Martin stated that on the Big Four tools were designed in such a manner that when scrapped they may be easily converted into other types of tools. One member uses the electric welding process to weld new tangs or drills. On the Santa Fe the high speed steel has been adopted as standard and all the carbon steel tools have been returned to the storehouse and credited back to the mechanical department. Thirty tons of this material has been sold back to the manufacturers. Surplus tools are not allowed to collect at any of the shops, they being turned back into the stores department. It was clearly developed that in order to obtain the best results from tools the best grade of steel is necessary.

SUPERHEATER TOOLS.

Fred Peterson, Colorado & Southern, Denver, Colo., a member of the committee, described the different tools used on the Emerson superheater as applied to their engines. In repairing the large flues at the front tube sheet it has been found expedient to place a coupling in the small superheater tubes near the header, so that they may be more readily removed when it is desired to work on the large flues on the front tube sheet. It was also found that the check valve was placed too near the front tube sheet, and a distance of 30 to 36 in. back from the front tube sheet was recommended so that the change in the temperature, due to the feed water, would not affect the large superheater tubes in the tube sheet.

A. R. Davis, Central of Georgia, Macon, Ga., described the special tools used to maintain superheaters. While that road has not had enough experience in handling superheater tubes, it is believed that it will be economical to maintain special tools for the handling of superheater flues.

Discussion.—There seemed to be a difference of opinion as

to grinding the header for the ball on the end of the unit pipes. Some roads do not do this and report satisfactory results. The Santa Fe issues definite instructions to the boilermakers concerning the use of the various special tools used on superheaters, and many roads follow the method recommended by the Locomotive Superheater Company. It seemed to be the consensus of opinion that it was bad practice to use the self-feeding flue rollers, as they tend to bulge the flues out. Different tools were described for cutting the flues out of the boiler.

THREAD CUTTING DIES.

A. W. Meitz, Pere Marquette, Grand Rapids, Mich., chairman of the committee, told of the method of making the chasers, giving the various angles for cutting different metals. He quoted from W. L. Ernst, of the National Machinery Company, relative to the shop practice of that company in making these tools, stating that in any cutting tool proper clearances should be given on the heel of the tool so there will be no rubbing to produce friction and thus heat the tool. The tool should also have the angle or rake on the cutting face to insure free cutting. In designing the interchangeable die the chaser should be of standard bar dimensions so as to use the least amount of stock in making these tools.

J. B. Hasty, Atchison, Topeka & Santa Fe, San Bernardino, Cal., also a member of the committee, stated that dies, like all other cutting tools, must be made and kept in good condition to produce good threads. It is safe to say that one-fourth of all the bolt cutters in operation at present do not cut a clean chip. Most of the threads are only ridges squeezed on the iron. This ruins the dies, and in fact the whole machine.

G. W. Smith, Chesapeake & Ohio, Huntington, W. Va., also a member of the committee, criticized the treatment that threading dies are subjected to. A good, steady man, after thoroughly learning the job of cutting threads, will be found to be a profitable investment, if allowed to continue on the job. Bad, dirty, iron, rust eaten bolts, and a quality of so-called soft steel will also render a good set of dies almost useless. A good bolt-cutting compound or oil is essential to keep the dies in good condition.

Discussion.—Most of the members found that the high speed steel did not come in as uniform sizes as the carbon steel, which necessitates turning or grinding. J. Martin, of the Big Four, believed that carbon steel was more economical than high speed steel in most cases. It was pointed out that it was cheaper to keep the die heads in good condition rather than to hob each set of dies for each individual head. Considerable trouble was experienced with warped dies when they were tempered outside of the tool room. On the Central of Georgia the bolt dies are examined each day by the tool foreman. In many cases it has been found that the manufacturers could reclaim special dies cheaper than the tool room organization.

On Wednesday afternoon the General Electric Company gave a demonstration of the electric furnace at its warehouse in Chicago. An account of Thursday's session will be given in next week's issue.

STRIKE AND CAR SHORTAGE IN SPAIN.—The Barcelona railway strike caused a slight check to business activity during the latter part of 1912. Farmers were also affected by the shortage in rolling stock of the railways, a condition which has become chronic every autumn when the demand for cars to move the crops coincides with the demand for cars to transport coal and other supplies to the great cities before the winter sets in. More and better railway service for the movement of both passengers and freight is imperative. An improvement has been made in passenger equipment and it is hoped that the increased earnings of the railroads during the past year will enable them to make some additions to the freight equipment.

General News.

Alexander M. Stephens has been appointed chief of railway mail service by the postmaster general. He began work as a railway mail clerk in 1894. He succeeds Theodore Ingalls.

An attempt is being made to organize the freight clerks employed on the Erie between New York and Buffalo, with a view to asking an increase in rates of pay amounting to about 20 per cent.

About 3,500 maintenance of way employees of the Western Maryland have been given increases in pay averaging about 5 per cent. These men include bridge carpenters, trackmen, masons and watchmen.

Telegraph and telephone operators and station agents on the Northern Pacific are taking a strike vote following the refusal of their demands for increased wages and changes in working conditions, especially for Sunday work.

A bill has been introduced in the Georgia legislature making it compulsory for street railways operating in cities of more than 20,000 inhabitants to provide separate cars for negro and white passengers, and cars with separate compartments in cities of less than 20,000.

On July 18 the boiler of the locomotive pulling the Southern Pacific train No. 11 from New Orleans to Houston exploded, killing the engineman and fireman and injuring a number of other persons. The explosion was caused, it is said, by low water in the boiler.

F. E. Blaser, general superintendent of the Baltimore & Ohio, with offices at Baltimore, Md., has been appointed to the general safety committee of the Baltimore & Ohio and Cincinnati, Hamilton & Dayton, succeeding C. W. Egan, general claim agent, resigned from this committee.

Professor R. Meeker, of Princeton, who has been nominated by President Wilson to be commissioner of labor statistics, has been nominated as the second member to serve with Judge Knapp on the board of mediation and conciliation. The Senate has not as yet confirmed this appointment.

A press despatch from Lisbon, Portugal, says that contracts have been signed for laying two new telegraph cables connecting United States and England by way of the Azores. The contract has been signed by the Portuguese government and by the Europe & Azores Telegraph Company.

The Union passenger station in Chicago was seriously threatened by fire on Sunday night, July 20. The fire is believed to have been started by crossed electric wires in the cupola at the north end of the structure and spread downward through the walls to the main waiting room. It was extinguished after causing damage estimated at $20,000.

The Baltimore & Ohio began last week paying its employees and also the C. H. & D. employees semi-monthly. Payments are made on the 5th and 20th of each month. The Baltimore & Ohio pays in cash in Baltimore, and outside of Baltimore by check. There are nearly 10,000 employees in and around Baltimore that are paid in cash, and the total payroll last year approximated $50,000,000.

The State Tax Commission of Ohio figures on which railroad taxes for the present year are to be based have just been made public and show an increase in the taxable value of railroad property of $32,945,600, bringing the aggregate value up to $665,074,810. The largest increase is in the valuation put upon the Lake Shore & Michigan Southern, which was $57,276,460 in 1912 and has now been increased by $9,160,660.

Frederick W. Whitridge, president of the Third Avenue Railroad and of the Yonkers Street Railway, has ordered double track work to be discontinued in Yonkers because of a dispute between some of the men engaged on this work and the labor unions. In his letter ordering the discontinuation of the work Mr. Whitridge strongly attacks the attitude of the mayor of Yonkers, who has worked to bring about a compromise which should exclude all non-union workers.

A bill has been introduced in Congress by Representative J. Hampton Moore to direct the Secretary of War to negotiate for

acquisition of the Chesapeake & Delaware Canal and to purchase, or in the event of the failure of the negotiations, to acquire the canal by condemnation. The canal runs from upper Chesapeake Bay to Delaware Bay, making a short waterway between Baltimore and Philadelphia. The bill was referred to the Committee on Railways and Canals, a committee which has not met in the recollection of anybody at the capitol.

Wells, Fargo & Company Express have organized an efficiency committee consisting of A. Christeson, vice-president, and E. A. Steadman, vice-president, and Comptroller Newlean. The committee will be assisted in its work by five superintendents. The work of the committee is described as follows: "Scientific efficiency as applied to the express business may be interpreted as making the ablest use of most complete knowledge. It means the accomplishment of more work and greater profit for the company and a rising scale of influence and compensation to the men in service."

The fast mail train of the Chicago, Milwaukee & St. Paul leaving St. Paul and Minneapolis in the evening for Chicago, has been equipped with a new type of marine search-light of 3,000,000 c. p. that throws a stream of light for a distance of three miles, in order to provide a means for the passengers to view the scenery after nightfall. The search-light is adjusted on the observation platform and is in charge of an experienced operator. The light can be swayed 90 deg. from right to left and 45 deg. upward. The road parallels the Mississippi river for 100 miles, and passes a large number of points of interest upon which to play the powerful light.

R. C. Richards, chairman of the Central Safety Committee of the Chicago & North Western, has compiled a statement showing the results of the safety work for the three years ended June 30, 1913, on the basis of the number of accidents occurring during the year ended June 30, 1910. This statement shows that there was a decrease of 28.6 per cent. in the number of employees killed and 24.8 per cent. in the number of employees injured; an increase of 12.1 per cent. in the number of passengers killed with a decrease of 23.6 per cent. in the number of passengers injured, and of 18.8 per cent. in the number of "outsiders" killed. During the three years from 1911 to 1913 there were 229 employees, 37 passengers and 572 "outsiders" killed on the North Western.

The July issue of *The Frisco Man*, the employees' magazine of the St. Louis & San Francisco, contains the following farewell message from B. L. Winchell, who recently resigned as president of that road to become director of traffic of the Union Pacific: "I am saying good-bye to Frisco and its army of fine fellows with real sadness. We have won many a fight together because officials and men stood shoulder to shoulder. No line in the southwest has enjoyed a better growth of traffic than the Frisco, and no employees have made more strenuous and self-sacrificing efforts to handle it well than those who represent this property. I am leaving the organization here intact; the same generals will command, and I know they will receive the same splendid support. Good luck to all of you."

Mrs. E. H. Harriman has just given an additional endowment of $10,000 to the fund of $50,000 she established in 1911 for the foundation of a bacteriological and pathological research laboratory, in connection with the hospital service of the Southern Pacific. Dr. F. K. Ainsworth, chief surgeon of the railroad, will have charge of the disposition of the funds. The purpose of the endowment is to further the progress of medical research. For the last two years, the work has been going on under the direction of Dr. W. T. Cummings of the Southern Pacific general hospital at San Francisco. This is the second large contribution to the Southern Pacific hospital service within the last two years, the widow of the late Collis P. Huntington having given $25,750 for the construction of a social hall now in use at the San Francisco hospital.

The secretary of agriculture has issued a permit to the Pacific Light & Power Corporation of Los Angeles, to build a series of power plants in the Sierra national forest; four power houses, two reservoirs, and 25 miles of cement-lined tunnels. Construction may extend over twelve years. The work is being done by the Stone & Webster Engineering Corporation. The ultimate development proposed is about 150,000 horsepower. The greater part of this power will be transmitted 240 miles into Los Angeles and will probably be used largely for extensions of interurban railways. The power will be transmitted over stranded aluminum cables at a pressure of 150,000 volts, the highest yet attempted in commercial transmission. This development is one of several under way or projected on national forest lands in California.

In order to save the railroad from a receivership and to help it meet a deficit, the people living along the line of the Kansas & Southwestern, a 60-mile road running west from Arkansas City, have asked that the three-cent passenger rate be restored on that line, and that the assessed valuation of the property be decreased by half. At a meeting held in Caldwell, Kan., on July 8, a committee were appointed to present the question of rates to the Kansas Public Utilities Commission, and to ask the state tax commission for the reduced valuation. The line was assessed last year at $662,000, and it has been estimated that $70,000 will be required to put the road in proper condition. It was stated at the meeting that people along the line desire the road to continue in operation and are willing to pay the higher rate in order to reduce the deficit, but the committee was instructed to oppose any increase in freight rates.

The Sale of Transportation.

It is reported that during the past few months the Packard Motor Car Company has delivered to purchasers, motor cars and trucks, with a total value of $8,120,000.

Unfilled Tonnage of the Steel Corporation.

The report of the United States Steel Corporation shows that the volume of unfilled tonnage on June 30, was 5,807,317 tons, a decrease of 517,005 tons as compared with 6,324,322 tons on May 31. The unfilled tonnage on April 30 was 6,978,762 tons; on March 31, 7,468,956 tons; on February 28, 7,656,714 tons; on January 31, 7,827,368 tons; and on June 30, 1912, 5,807,346 tons.

Five Hundred and Fifty Miles Without a Stop.

A press despatch from Berlin, Germany, July 13, reports that a French aviator, Leon Letort, traversed the distance from Paris, France, to Berlin, on that day in nine hours, making no stops. The distance, in an air line, is 550 miles. Letort started at 4:10 a. m., and arrived at 1:10 p. m.

Retirement of Colonel Yorke.

Lieut-Col. P. G. von Donop, one of the inspecting officers of the railway department of the British Board of Trade, has been appointed chief inspecting officer, in place of Colonel Sir Horatio Arthur Yorke, who retires on August 6, owing to the prescribed age limit. Colonel von Donop entered the Royal Engineers in 1871, became captain in 1883, and major in 1890; was inspector of Submarine Defences in India from 1889 to 1894, became lieutenant-colonel in 1897. He has been in the service of the Board of Trade 14 years.

The Railroads' Valuation Committee.

Thomas W. Hulme, general secretary of the railroad presidents' Conference Committee on Valuation, has issued a circular to roads not represented in the committee, inviting them to take advantage of its work. It appears that the committee, as formed in April, represents only roads having earnings of over $1,000,000 a year; and this circular is sent to companies which reported last year a sum smaller than this. The presidents have already secured the appointment by the railroad companies of a committee of engineers and real estate officers, as heretofore announced; and it recommends that each company appoint a valuation committee to supervise its own work. Conferences between committees of different roads, within the same territorial group, are also recommended. Mr. Hulme's address is Broad street station, Philadelphia, Pa.

Money for Mr. Mellen.

A statistician of the New York, New Haven & Hartford says that New England is doing this year the greatest summer resort business in her history; and he figures that about 1,400,000 people

spent their vacation within the confines of New England in the year 1912. A compilation based on the hotel and boarding house lists and covering all the railroads shows that last year there were 4,406 hotels and boarding houses in New England with a total capacity of 222,141 persons. For the total number of persons accommodated he multiplies the total capacity by six, figuring on the average vacation being two weeks and the season to consist of twelve weeks. This would give 1,332,846 persons accommodated in the season. Estimates based on these figures and from the reports of hotel keepers would place the amount spent by these vacationists at, roughly, $100,000,000.

That the summer resort business is one of New England's leading industries is indicated when comparison is made with her agricultural figures. The total value of all of New England's crops in 1909, as given by the census, was $141,113,829. The total value of her dairy products in the same year was $50,720,766, or about half the estimated amount which summer visitors spent last year. In 1912 Maine had 1,265 hotels and boarding houses with a total capacity of 69,073; New Hampshire had 1,157, with a total capacity of 55,953; Vermont had 513, with a capacity of 9,194; Massachusetts had 695, with a capacity of 44,676; Rhode Island 163, with a capacity of 15,400, and Connecticut 613, with a capacity of 27,845.

Following English Precedent.

A few years ago, the board of directors of the New York, New Haven & Hartford, desirous of making some experiments along this line, appropriated $5,000 for beautifying the cut through which its main line runs at Mount Vernon, N. Y. This cut extends for several miles and in places is over a hundred feet deep. It is lined in places with brown or gray stone.

The work of beautifying was put in charge of C. D. Perkins, division engineer. The ditches along the tracks were concreted, the long sloping sides of the cut were planted with grass seed and then this was strewn with Dorothy Perkins rambler roses. The result has been a transformation of this part of the line. For weeks this spring and until just recently travelers passing through this cut saw on the slopes above their heads a mass of pink roses against a background of green sward. Each year the display has grown more beautiful. Mr. Perkins has in the last year or two extended the rosebeds until now they are found at Stamford, Riverside, Greenwich, Port Chester and several other places where the soil has been favorable.

The B. & O. Annual Picnic.

Arrangements are being made for the thirty-second annual reunion of the Baltimore & Ohio employees, known as the "Jennie Smith" picnic, which will be held at the usual place, Island Park, Harper's Ferry, W. Va., on July 31. This custom was commenced in 1881.

The Baltimore & Ohio men will run special trains from all parts of the system within a day's ride of Harper's Ferry, which includes Baltimore, Washington, Mount Airy, Hagerstown and points along the old main line and from Keyser, Piedmond and Cumberland.

As on former occasions, Miss Jennie Smith, railroad evangelist, who originated the reunion idea, and who has attended every picnic since 1881 will give one of her talks to her "boys" who have named the picnic in her honor.

Miss Smith's evangelistic work among the railroad men was begun on the B. & O. as a young girl. In early childhood, as the result of an accident, she was made an invalid and for several years was bedridden. Specialists were consulted in various parts of the country from time to time, and while making one of these journeys in a B. & O. baggage car on her cot the baggagemaster suggested to the young girl that she might find some relief through prayer. Miss Smith prayed with the railroad man in the baggage car, promising to devote her lifework, if restored to the use of her limbs, to the men of the railroad.

Parcels Post Maximum Increased.

On August 15 the maximum weight of parcels post packages is to be raised from 11 lbs. to 20 lbs. At first this maximum of 20 lbs. will apply only to parcels sent to the first or second zone from any given post office, a distance of about 150 miles. There will also be made a reduction in rates on packages moving to first or second zone destinations. Thus, the rate on a package weighing more than 4 oz. will be reduced from five cents for the first pound and one cent for each additional pound or fraction thereof to five cents for the first pound, and one cent for each additional two pounds or fraction thereof; and the rate for the second zone will be reduced from five cents for the first pound and three cents for each additional pound to five cents for the first pound and one cent for each additional pound. The insurance fee, which has been heretofore 10 cents, has been reduced to five cents for parcels valued up to $25 and is now 10 cents for parcels valued at from $25 to $50.

Congress has shown some opposition to these proposals of the Postmaster General, and has asked Mr. Burleson for an explanation of his plans.

Tickets for Train Escorts.

The following is a letter which appeared in the New York *Times*, signed "A Railroad Official, Abingdon, Va.":

I notice a letter from T. Barton suggesting that tickets be sold for the use of escorts who wish to accompany passengers to trains. I have been wondering for several years why this plan has not been adopted at the large stations in the United States, as it seems to work in a first-class way on the Continent.

While at the Manhattan station the Pennsylvania does not seem to need it so much because the gates are so close to the trains, it would be a great accommodation to the public at Jersey City, Philadelphia, Washington and some other Pennsylvania stations, if a nickel automatic slot machine were provided, where escorts and friends who desired to go through the gates might purchase tickets.

Superheaters for New Haven Locomotives.

The New York, New Haven & Hartford will equip about 350 of its locomotives with superheaters. The locomotives will be overhauled at the rate of five a month at a total cost of about $1,000,000. All of the 50 new Pacific type locomotives just acquired by it have superheaters. The large outlay required by this work is justified by the fact that while hauling capacity of a locomotive is increased about 20 per cent., there is at the same time a saving effected of 20 per cent. in coal and 25 per cent. in water. The work of overhauling the locomotives of the New Haven system will be done at the Readville, Mass., shops.

Coroner's Findings on the New Haven Wreck.

The coroner, John J. Phelan, in his findings in the investigation of the wreck which occurred on the New York, New Haven & Hartford on June 12 at Stamford, holds that neither Doherty, the engineer, nor the management were to blame for negligence in connection with the wreck. The coroner finds that the management exercised due care in testing Doherty's competence, and says that the charges of incompetence made against Doherty have been disproved in the hearings before him. The coroner's findings in regard to Doherty are not particularly clear, but he absolves the engineman of any criminal negligence. The coroner says that while he erred in not setting the brakes sooner, he did set the brakes when he honestly thought that it was necessary.

Exhibitors at the Tool Foremen's Convention.

Among the exhibitors at the convention of the American Railway Tool Foremen's Association, held at the Hotel Sherman, Chicago, July 22-24, were the following:

Allen & Co., Edgar, Chicago.—Tool steels. Represented by J. J. Cruice, R. G. Bennett and Robert A. Anderson.

American Specialty Company, Chicago.—"Use-em-up" drill sockets. Represented by H. L. Mills.

Brown & Company, Tom, Chicago.—Expanders, flue cutters, beading tools, flue hole cutters and adjustable hand reamer. Represented by Harry W. Stannard.

Carborundum Company, Niagara Falls, N. Y.—General line of carborundum, Aloxite wheels, Aloxite cloth in economy rolls. Represented by C. C. Schumaker, R. H. Hogg and J. F. Hanlon.

Celfor Tool Company, Buchanan, Mich.—High speed forged twisted drills, forged reamers, three-lip drills, flue sheet drills, flue cutters. Represented by W. Nochumson and C. O. Montague.

Chicago Pneumatic Tool Company, Chicago.—Pneumatic air drills and hammers, Duntley electric drills. Represented by C. E. Walker, J. C. Campbell and P. F. Flavin.

Cleveland Twist Drill Company, Cleveland, Ohio.—Twist drills and reamers, Paragon drills, Peerless and Paradox reamers and double tange sleeves. Represented by H. S. White.

Colonial Steel Company, Chicago.—Samples of steel. Represented by H. A. Montgomery and James E. Berry.

Desmond-Stephan Manufacturing Company, Urbana, Ohio.—Grinding wheel dressers. Represented by C. N. Kohler.

Eagle Claw Wrench Company, Chicago.—General line of wrenches. Represented by Eugene Ambler.

Faessler Manufacturing Company, J., Moberly, Mo.—Expanders, cutters, etc. Represented by G. R. Maupin.

Independent Pneumatic Tool Company, Chicago.—Drills, riveting and chipping hammers. Represented by R. T. Scott, G. C. Wilson, H. H. Hendricks, C. B. Ross and Fred Passino.

Ingersoll-Rand Company, New York, N. Y.—Little David drills and riveters, Crown chipping hammers, Imperial chipping hammers, Tell-tale motors, short stroke riveters and holders on. Represented by Charles R. Hewitt.

Marvin & Casler Company, Canastota, N. Y.—Offset boring head. Represented by E. T. Jones, Oneida, N. Y.

National Machinery Company, Tiffin, Ohio.—1½ in. single bolt cutter, motor drive and die grinder, motor drive, belt cutter heads. Represented by K. L. Ernest and Charles Harmon, Jr.

National Tool Company, Cleveland, Ohio.—Milling cutters, counter borers and special tools. Represented by E. A. Noll, H. A. Duetemeyer, J. L. Holstein and J. P. Jones.

Norton Company, Worcester, Mass.—Grinding wheels and miscellaneous material. Represented by H. J. Eckstedt and J. W. Horne.

Racine Tool & Machine Company, Racine, Wis.—Metal cutting machines. Represented by J. M. Jones, W. L. Candee and Fred Thoennes.

Ryerson & Son, Joseph T., Chicago.—Drills and boring bars. Represented by H. C. Williamson and C. E. Pynchon.

Skinner Chuck Company, New Britain, Conn.—Drill and lathe chucks, drill press vises, arbors and planer chucks. Represented by W. S. Rand.

Van Dorn Electric Tool Company, Cleveland, Ohio.—Electrically-operated portable drills, reamers and grinders. Represented by George Stoiber.

Weaver Manufacturing Company, Springfield, Ill.—Weaver roller jaw drill chucks, Weaver auto twin jack. Represented by C. F. Hodgson and J. P. Neerup.

Whitman & Barnes Manufacturing Company, Akron, Ohio.—Drills, reamers and wrenches. Represented by A. O. Wange.

MEETINGS AND CONVENTIONS.

The following list gives names of secretaries, dates of next or regular meetings, and places of meeting.

AIR BRAKE ASSOCIATION.—F. M. Nellis, 53 State St., Boston, Mass.

AMERICAN ASSOCIATION OF DEMURRAGE OFFICERS.—A. G. Thomason, Boston, Mass. Convention, May 19, 1914, St. Louis.

AMERICAN ASSOCIATION OF GENERAL PASSENGER AND TICKET AGENTS.—W. C. Hope, New York. Annual meeting, October 14-15, Philadelphia, Pa.

AMERICAN ASSOCIATION OF FREIGHT AGENTS.—R. O. Wells, East St. Louis, Ill.

AMERICAN ASSOCIATION OF RAILROAD SUPERINTENDENTS.—E. H. Harman, St. Louis, Mo.; 3d Friday of March and September.

AMERICAN ELECTRIC RAILWAY ASSOCIATION.—H. C. Donecker, 29 W. 39th St., New York.

AMERICAN ELECTRIC RAILWAY MANUFACTURERS' ASSOC.—H. G. McConnaughy, 165 Broadway, New York. Meetings with Am. Elec. Ry. Assoc.

AMERICAN RAILWAY ASSOCIATION.—W. F. Allen, 75 Church St., New York. Next meeting, November 19, 1913, Chicago.

AMERICAN RAILWAY BRIDGE AND BUILDING ASSOCIATION.—C. A. Lichty, C. & N. W., Chicago. Convention, October 21-24, 1913, Montreal.

AMERICAN RAILWAY ENGINEERING ASSOCIATION.—E. H. Fritch, 900 S. Michigan Ave., Chicago.

AMERICAN RAILWAY MASTER MECHANICS' ASSOCIATION.—J. W. Taylor, Old Colony building, Chicago.

AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.—A. R. Davis, Central of Georgia, Macon, Ga.

AMERICAN SOCIETY FOR TESTING MATERIALS.—Prof. E. Marburg, University of Pennsylvania, Philadelphia, Pa.

AMERICAN SOCIETY OF CIVIL ENGINEERS.—C. W. Hunt, 220 W. 57th St., New York; 1st and 3d Wed., except June and August, New York.

AMERICAN SOCIETY OF ENGINEERING CONTRACTORS.—J. R. Wenlinger, 11 Broadway, New York; 2d Tuesday of each month, New York.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS.—Calvin W. Rice, 29 W. 39th St., New York.

AMERICAN WOOD PRESERVERS' ASSOCIATION.—F. J. Angier, B. & O., Baltimore, Md. Next convention, January 20-22, 1914, New Orleans, La.

ASSOCIATION OF AMERICAN RAILWAY ACCOUNTING OFFICERS.—C. G. Phillips, 143 Dearborn St., Chicago. Annual meeting, May 28, Atlantic City, N. J.

ASSOCIATION OF RAILWAY CLAIM AGENTS.—J. R. McSherry, C. & E. I., Chicago.

ASSOCIATION OF RAILWAY ELECTRICAL ENGINEERS.—Jos. A. Andreucetti, C. & N. W. Ry., Chicago. Annual convention, October 18-24, Chicago.

ASSOCIATION OF RAILWAY TELEGRAPH SUPERINTENDENTS.—P. W. Drew, 112 West Adams St., Chicago.

ASSOCIATION OF TRANSPORTATION AND CAR ACCOUNTING OFFICERS.—G. P. Conard, 75 Church St., New York.

ASSOCIATION OF WATER LINE ACCOUNTING OFFICERS.—W. R. Evans, Chamber of Commerce, Buffalo, N. Y. Annual meeting, October 8, Philadelphia, Pa.

BRIDGE AND BUILDING SUPPLY MEN'S ASSOCIATION.—H. A. Neally, Joseph Dixon Crucible Co., Jersey City, N. J. Meeting with American Railway Bridge and Building Association.

CANADIAN RAILWAY CLUB.—James Powell, Grand Trunk Ry., Montreal, Que.; 2d Tuesday in month, except June, July and Aug., Montreal.

CANADIAN SOCIETY OF CIVIL ENGINEERS.—Clement H. McLeod, 413 Dorchester St., Montreal, Que.; Thursday, Montreal.

CAR FOREMEN'S ASSOCIATION OF CHICAGO.—Aaron Kline, 841 North 50th Court, Chicago; 2d Monday in month, Chicago.

CENTRAL RAILWAY CLUB.—H. D. Vought, 95 Liberty St., New York; 2d Thurs. in Jan. and 2d Fri. in March, May, Sept., Nov., Buffalo, N. Y.

CIVIL ENGINEERS' SOCIETY OF ST. PAUL.—L. S. Pomeroy, Old State Capitol building, St. Paul, Minn.; 2d Monday, except June, July, August and September, St. Paul.

ENGINEERS' SOCIETY OF PENNSYLVANIA.—E. R. Dasher, Box 704, Harrisburg, Pa.; 1st Monday after 2d Saturday, Harrisburg, Pa.

ENGINEERS' SOCIETY OF WESTERN PENNSYLVANIA.—E. K. Hiles, Oliver building, Pittsburgh; 1st and 3d Tuesday, Pittsburgh, Pa.

FREIGHT CLAIM ASSOCIATION.—Warren P. Taylor, Richmond, Va.

GENERAL SUPERINTENDENTS' ASSOCIATION OF CHICAGO.—E. S. Koller, 226 W. Adams St., Chicago; Wed. preceding 3d Thurs., Chicago.

INTERNATIONAL RAILWAY CONGRESS.—Executive Committee, 11, rue de Louvain, Brussels, Belgium. Convention, 1915, Berlin.

INTERNATIONAL RAILWAY FUEL ASSOCIATION.—C. G. Hall, 922 McCormick building, Chicago.

INTERNATIONAL RAILWAY GENERAL FOREMEN'S ASSOCIATION.—Wm. Hall, 829 West Broadway, Winona, Minn.

INTERNATIONAL RAILROAD MASTER BLACKSMITHS' ASSOCIATION.—A. L. Woodworth, Lima, Ohio. Annual meeting, August 18, Richmond, Va.

MAINTENANCE OF WAY & MASTER PAINTERS' ASSOCIATION OF THE UNITED STATES AND CANADA.—W. G. Wilson, Lehigh Valley, Easton, Pa.

MASTER BOILER MAKERS' ASSOCIATION.—Harry D. Vought, 95 Liberty St., New York.

MASTER CAR BUILDERS' ASSOCIATION.—J. W. Taylor, Old Colony building, Chicago.

MASTER CAR AND LOCOMOTIVE PAINTERS' ASSOC. OF U. S. AND CANADA.—A. P. Dane, B. & M., Reading, Mass. Annual meeting, September 9-12, Ottawa, Can.

NATIONAL RAILWAY APPLIANCE ASSOC.—Bruce V. Crandall, 537 So. Dearborn St., Chicago. Meetings with Am. Ry. Eng. Assoc.

NEW ENGLAND RAILROAD CLUB.—W. E. Cade, Jr., 683 Atlantic Ave., Boston, Mass.; 2d Tuesday in month, except June, July, Aug. and Sept., Boston.

NEW YORK RAILROAD CLUB.—H. D. Vought, 95 Liberty St., New York; 3d Friday in month, except June, July and August, New York.

NORTHERN RAILROAD CLUB.—C. L. Kennedy, C., M. & St. P., Duluth, Minn.; 4th Saturday, Duluth.

PEORIA ASSOCIATION OF RAILROAD OFFICERS.—M. W. Rotchford, Union Station, Peoria; 2d Thursday.

RAILROAD CLUB OF KANSAS CITY.—C. Manlove, 1008 Walnut St., Kansas City, Mo.; 3d Friday in month, Kansas City.

RAILWAY BUSINESS ASSOCIATION.—Frank W. Noxon, 2 Rector St., New York. Annual dinner, second week in December, 1913, New York.

RAILWAY CLUB OF PITTSBURGH.—J. B. Anderson, Penna. R. R., Pittsburgh, Pa.; 4th Friday in month, except June, July and August, Pittsburgh.

RAILWAY ELECTRICAL SUPPLY MANUFACTURERS' ASSOC.—J. Scribner, 1021 Monadnock Block, Chicago. Meetings with Assoc. Ry. Elec. Engrs.

RAILWAY FIRE PROTECTION ASSOCIATION.—C. B. Edwards, Mobile & Ohio, Mobile, Ala. Next meeting, October 7, Chicago.

RAILWAY GARDENING ASSOCIATION.—J. S. Butterfield, Lee's Summit, Mo. Next meeting, August 12-15, Nashville, Tenn.

RAILWAY DEVELOPMENT ASSOCIATION.—W. Nicholson, Kansas City Southern, Kansas City, Mo.

RAILWAY SIGNAL ASSOCIATION.—C. C. Rosenberg, Bethlehem, Pa. Convention, October 14, Nashville, Tenn.

RAILWAY STOREKEEPERS' ASSOCIATION.—J. P. Murphy, Box C, Collinwood, Ohio.

RAILWAY SUPPLY MANUFACTURERS' ASSOC.—J. D. Conway, 2135 Oliver bldg., Pittsburgh, Pa. Meetings with M. M. and M. C. B. Assocs.

RAILWAY TEL. AND TEL. APPLIANCE ASSOC.—W. E. Harkness, 284 Pearl St., New York. Meetings with Assoc. of Ry. Teleg. Sups.

RICHMOND RAILROAD CLUB.—F. O. Robinson, Richmond, Va.; 2d Monday except June, July and August.

ROADMASTERS' AND MAINTENANCE OF WAY ASSOCIATION.—L. C. Ryan, C. & N. W., Sterling, Ill. Convention, September 8-12, 1913, Chicago.

ST. LOUIS RAILWAY CLUB.—B. W. Frauenthal, Union Station, St. Louis, Mo.; 2d Friday in month, except June, July and Aug., St. Louis.

SIGNAL APPLIANCE ASSOCIATION.—F. W. Edmonds, 3868 Park Ave., New York. Meetings with annual convention Railway Signal Association.

SOCIETY OF RAILWAY FINANCIAL OFFICERS.—C. Nyquist, La Salle St. Station, Chicago.

SOUTHERN ASSOCIATION OF CAR SERVICE OFFICERS.—E. W. Sandwich, A. & W. P. Ry., Montgomery, Ala.

SOUTHERN & SOUTHWESTERN RAILWAY CLUB.—A. J. Merrill, Grant bldg., Atlanta, Ga.; 3d Thurs., Jan., March, May, July, Sept., Nov., Atlanta.

TOLEDO TRANSPORTATION CLUB.—J. G. Macomber, Woolson Spice Co., Toledo, Ohio; 1st Saturday, Toledo.

TRACK SUPPLY ASSOCIATION.—W. C. Kidd, Ramapo Iron Works, Hillsburn, N. Y. Meeting with Roadmasters' and Maintenance of Way Association.

TRAFFIC CLUB OF CHICAGO.—W. H. Wharton, La Salle Hotel, Chicago.

TRAFFIC CLUB OF NEW YORK.—C. A. Swope, 290 Broadway, New York; last Tuesday in month, except June, July and August, New York.

TRAFFIC CLUB OF PITTSBURGH.—D. L. Wells, Erie, Pittsburgh, Pa.; meetings monthly, Pittsburgh.

TRAFFIC CLUB OF ST. LOUIS.—A. F. Versen, Mercantile Library building, St. Louis, Mo. Annual meeting in November. Noonday meetings October to May.

TRAIN DESPATCHERS' ASSOCIATION OF AMERICA.—J. F. Mackie, 7042 Stewart Ave., Chicago.

TRANSPORTATION CLUB OF BUFFALO.—J. M. Sells, Buffalo; first Saturday after first Wednesday.

TRANSPORTATION CLUB OF DETROIT.—W. R. Hurley, L. S. & M. S., Detroit, Mich.; meetings monthly.

TRAVELING ENGINEERS' ASSOCIATION.—W. O. Thompson, N. Y. C. & H. R., East Buffalo, N. Y. Annual meeting, August, 1913, Chicago.

UTAH SOCIETY OF ENGINEERS.—R. B. Ketchum, University of Utah, Salt Lake City, Utah; 3d Friday of each month, except July and August.

WESTERN CANADA RAILWAY CLUB.—W. H. Rosevear, P. O. Box 1707, Winnipeg, Man.; 2d Monday, except June, July and August, Winnipeg.

WESTERN RAILWAY CLUB.—J. W. Taylor, Old Colony building, Chicago; 3d Tuesday of each month, except June, July and August.

WESTERN SOCIETY OF ENGINEERS.—J. H. Warder, 1735 Monadnock Block, Chicago; 1st Monday in month, except July and August, Chicago.

Traffic News.

A new Texas cotton tariff abolishing the Galveston-Houston differential and applying continuous short line mileage has been submitted to the Texas railroad commission by representatives of the Texas railroads interested.

President Pennington of the Minneapolis, St. Paul & Sault Ste. Marie, in speaking of the crop outlook in the northwest said, "We do not expect a crop as large as the one last year in North Dakota. Minnesota will do better; we will get more grain to haul from our Minnesota stations relatively."

A bill has been introduced in the United States House of Representatives providing for the establishment of experimental farms in each county and parish in each state of the union. The bill calls for an appropriation of $10,000,000, to be expended under the direction of the secretary of agriculture.

Representative Kahn of California has introduced into the lower house of Congress an amendment to the laws relating to bills of lading, providing that all actions or suits brought to recover loss under a bill of lading shall be begun within one year after the goods covered are damaged or lost.

The two-cent passenger fare and the new freight rates reduced by from 5 to 40 per cent., which were sustained by the Supreme Court in its recent decision in the Minnesota rate case, became effective at midnight, July 20. Corresponding reductions in rates were made at the same time to several cities just across the state line.

The Missouri Public Service Commission has estimated that the costs in the Missouri state rate litigation will amount to approximately $30,960, which will be paid by the 13 roads against which the Supreme Court has just decided the case Approximately $20,000 was expended for printing the records in the case, and the balance was for stenographic services and court fees.

In accordance with the orders of the Interstate Commerce Commission, the roads running from the Lakes to the Pittsburgh and Wheeling districts have equalized their rates on iron ore, making the rate 88 cents to both districts. This is an increase of 28 cents in the rate to the Wheeling district and a decrease of eight cents in the rate to the Pittsburgh district. This action has called forth a protest both from Pittsburgh steel interests and Wheeling steel man.

After September 1 the Pennsylvania Railroad will discontinue its free delivery of freight in both Washington and Baltimore. The free delivery of freight in Baltimore was established in 1870 as a temporary expedient. In Washington a free delivery of certain classes of shipments began in 1883 as a temporary plan to relieve the serious congestion which had developed at local terminals. The Pennsylvania had proposed to discontinue the free delivery in Washington, but the Interstate Commerce Commission, in a recent decision, held that the railroad could not discontinue this service in Washington while continuing it in Baltimore.

As suggested in the Interstate Commerce Commission's report on the New England situation, the Commission is now waiting a special investigation into the rate situation of the Boston & Maine. The B. & M. is at present engaged in preparing schedules of new rates which it proposes to submit to the commission which are understood to be materially higher than those now in effect. It is understood that one of the grounds upon which the B. & M. will attempt to justify the proposed increases is that the additional revenue is needed and will be used to bring the physical condition of the property up to the standard which the commission itself recognizes is the proper one to maintain.

The Railroad "Rate Problem" Epitomized.

The Buffalo *Courier*, printing a recent news item, gets the whole of a 24-line paragraph into the heading, as follows: "Roads Are Pigs, Say the Pig Iron Men; Virginia Shippers Claim Selfish Rate Discrimination." The report goes on: Pig iron producers in Virginia have filed a complaint with the Interstate Commerce Commission against the Southern Railway, the Chesapeake & Ohio, the Norfolk & Western, the Pennsylvania and others, alleging that under the rates now in force, they are handicapped in reaching some eastern markets and entirely prevented from reaching others. Statistics are given showing that the Pennsylvania Railroad, in particular, receives the largest portion of the rate, and that in some instances the rates to eastern points are 20 per cent. higher than from Ohio, New York, and other states.

The Oats Crop.

Oats are now being cut in Missouri and Kansas. Iowa, the premier oats state this year, will begin to cut that crop within a week. The last week in July is usually the season in which this, the second largest cereal crop, is cut in the chief states extending from the Atlantic seaboard west to the Rocky mountains. This year Iowa has an area of 12.7 per cent. of the total United States acreage, and should on these 5,000,000 acres get from 150,000,000 to 175,000,000 bus.

Illinois ranks next with 4.2 per cent. of the entire area of 38,341,000 acres. Dry conditions in central Illinois will cut down that state's yield somewhat, but elsewhere the prospect is fine according to some reports of field observers.

Since the government's report on July 9 the indicated yield of 1,000,000,000 bus. has generally been accepted as the most probable forecast. The condition of 76.3 on July 1 was not high, however, and a lower total was not at all surprising. Since June 30 the December price of oats at Chicago, which is the best price index of the trade estimate for crop prospects, has dropped from 44 to 40 cents and under. That is still, however, 5 or 6 cents higher than last year's quotation at this date, and is taken to mean that the billion bushel yield, which is 387,000,000 bus. below last year's final, is probably not an overestimate.

At these higher prices this season's oats might be expected to move early in August with a good deal of freedom. But on account of the big yield of 1912 there is no such emptiness in bins and other stocks as followed the short crop of 92,000,000 bus, in 1911. A rather slow selling is looked for in the early part of the season. Owing also to late hay shortage growers are apt to hold on to their oats for better prices.—*Wall Street Journal.*

INTERSTATE COMMERCE COMMISSION.

The commission has further suspended from July 25 until January 25 the supplement to the tariff of the Chicago, Milwaukee & St. Paul, which proposed to increase the rates on wheat, flour, corn, rye, oats and barley, from Spencer, Ia., and other points to Sioux City, Ia.

The commission has suspended from July 21 until November 18 the supplement to the tariff of the Baltimore & Ohio Chicago Terminal Railroad, which would advance rates on crushed stone from McCook and Thornton, Ill., to various points in Indiana and Michigan. This was to have been accomplished by the cancellation of through rates and the application thereafter of combinations of locals. For example, the present joint through rate on the traffic involved is 35½ cents per net ton from McCook, Ill., to Munster, Ind., and the proposed rate 55 cents per net ton, resulting in an advance of 19½ cents per net ton.

W. A. Gardner, president of the Chicago & North Western, was the principal witness for his road at a hearing before Examiner Settle of the Interstate Commerce Commission, at Chicago last week, involving advances in the rates on ore in the iron region of Wisconsin and Michigan. He testified he had given personal attention to the rate situation in the iron country, and that he himself had ordered the advance in rates. He stated that the service of the North Western between the mines and docks was primarily a terminal service, and that because of the short hauls the switching expense was out of all proportion to the line haul. The iron region, he said, is like one vast yard that requires an unusually large number of employees, who are receiving 45 per cent. higher wages than in 1900, while their work has become specialized so that more are now required for the same service. From 1909 to 1912 the company had spent $515,000 for side tracks, $6,000,000 for cars and $4,000,000 for docks to handle this ore traffic in order to give better service to the shippers. Mr. Gardner was followed by E. D. Brigham, assistant freight traffic manager, who covered more in detail the points made by the president.

Reparation Awarded.

Victor Manufacturing Company et al v. Southern Railway. Enraree Manufacturing Company et al v. Louisville & Nashville et al. Opinion by Commissioner Merrill:

The complainant asks for reparation on shipments of coal from the coal regions in eastern Tennessee and other coal regions grouped therewith, made before the last reduction in the rates between the points in question. The commission decided that at the time when the shipments moved the rates were excessive to the extent of ten cents a ton, and awarded reparation on that basis. (27 I. C. C., 661.)

Washington Milling Company v. Norfolk & Western Railway Company et al. Opinion by the commission:

The rate of 19 cents per 100 lbs. for the transportation of grain products, in carloads, from Washington Court House, Ohio, to points on the Norfolk & Western east of Kenova, W. Va., to and including Bluefield, W. Va., found unreasonable to the extent it exceeds 15 cents per 100 lbs. and that rate was prescribed for the future. (27 I. C. C., 546.)

Complaint Dismissed.

Lesser-Goldman Cotton Company et al. v. St. Louis, Iron Mountain & Southern et al. Opinion by the commission:

The complainants seek reparation for an alleged unreasonable and unjustly discriminatory rate paid on shipments of "concentrated" cotton from Arkansas points to Boston, Mass., and other eastern points. The commission decided that the record fails to show that the rate in issue was unreasonable or unjustly discriminatory at the time it was charged. (27 I. C. C., 496.)

Hampton Manufacturing Company v. Old Dominion Steamship Company, et al. Opinion by the commission:

The commission decided that charges for the transfer in transit, at New York, of certain less-than-carload shipments of iron columns from Hampton, Va., to Kings Park, Long Island, N. Y., and from Kings Park to Hampton on return movements, were not shown to have been unreasonable. Reparation was denied. (27 I. C. C. 666.)

Hennepin Paper Company, et al. v. Northern Pacific, et al. Opinion by Commissioner Clements:

The commission decided that the application on news print paper of lower rates from New England milling points to Central Freight Association territory and from Wisconsin milling points to southwestern points than from Little Falls and Sartell, Minn., to the same destinations, was not shown to constitute unjust discrimination under section 3 of the act to regulate commerce. (27 I. C. C. 699.)

California Pole & Piling Company, et al., v. Southern Pacific. Opinion by the commission:

In this case the complainant contends that the defendant charged unreasonable rates for the transportation of poles and piling in carloads from points in Oregon to points in California. The rate charged exceeded by one dollar per ton the lumber rates in force between the same points. The commission decided that the rates charged were not shown to have been unreasonable. (27 I. C. C. 670.)

Joint Rates Over Interurban Electric Lines.

Louisville Board of Trade et al. v. Indianapolis, Columbus & Southern Traction Company et al. Opinion by Commissioner Harlan:

The complainant asks that through routes and joint rates be established for less than carload freight between Louisville and points near Indianapolis over connecting interurban electric lines. These interurban lines now do a large passenger business and some perishable freight business. They claim that freight traffic will injure their passenger business and would result in severe congestion. They also point out that freight now moves between any of the points in question over the lines of steam railroads. The complainant showed that the electric service would be much better than the steam railroads for package freight, as it would be more expeditious. The complainant asked that the through rates over the interurban lines should not exceed those over the steam railroads, both to points intermediate to Indianapolis and to points beyond. The commission decided that the defendants should grant the relief sought by the complainant and ordered them to establish through routes for package freight between the points desired. The commission also ordered the defendants to establish joint rates between Louisville and points intermediate to Indianapolis which should be no higher than the rates charged by the Pennsylvania Lines West. Joint rates were not prescribed to points beyond Indianapolis as the commission decided that the combination of local rates on Indianapolis would be reasonable. (27 I. C. C., 499.)

Wheat Rates Reduced.

Federal Milling Company v. Minneapolis, St. Paul & Sault Ste. Marie, et al. Opinion by Commissioner Clements:

The aggregate rate on wheat, all rail, from Minneapolis to New York, via Chicago and Lockport, N. Y., is 26 cents and on flour 25 cents. The aggregate rate on this wheat milled in transit at Lockport is 27.2 cents. The rate on wheat was held to be unreasonable to the extent that it exceeds the rate on flour, and the defendant carriers were required to maintain on wheat milled at Lockport transit rates and regulations on the same relative basis as proposed by them in *Board of Trade of the City of Chicago v. C. & A. R. R. Co.*, 21 I. C. C., 530, mentioned in the *Railway Age Gazette* of July 18, page 125. (27 I. C. C. 696.)

Rates from St. Louis to Kansas Points Reduced.

State of Kansas, et al., v. Atchison, Topeka & Santa Fe, et al. Opinion by Commissioner Clements:

The commission decided that the class and commodity rates from St. Louis to interior Kansas points were unreasonable and unduly discriminatory, and prescribed reasonable maximum class rates to Topeka, Salina, Hutchinson, Wichita, Dodge City, and Goodland as representative destinations; the commodity rates to these points and both class and commodity rates to other points in interior Kansas were left to be readjusted by the carriers relatively.

It is of secondary importance whether the present unreasonable rate adjustment from St. Louis to points in interior Kansas is due to the existence of the Missouri river as a basing line, or to some other method of making rates. The primary question is whether these rates, in whatever manner constructed, are reasonable and free from undue discrimination. The manner of their construction is pertinent in this proceeding only in the opportunity afforded to the commission more minutely to examine the through rate by consideration also of its constituent parts.

In considering the reasonableness of a comprehensive rate fabric such as the one in question, the commission must look more to the adjustment as a whole than to individual comparisons, as much can be ostensibly proved by either party to controversies before the commission by care in the selection of individual rates convenient for the purpose. Such rates are ever present in tariffs and cover a wide range. (27 I. C. C. 673.)

Rates on Butter and Eggs Not Increased.

In re investigation and suspension of advances in rates by carriers for the transportation of butter and eggs from Topeka, Kan., to Memphis, Tenn., and other points. Opinion by Commissioner Harlan:

The commission found that the respondent had not shown sufficient justification for the proposed withdrawal of the present commodity rates from Topeka and the imposition of class rates; and decided that the present rates are just and reasonable and should not be exceeded for the future. (27 I. C. C. 692.)

Duluth Discriminated Against.

Commercial clubs of the city of Duluth v. Baltimore & Ohio, et al. Opinion by Commissioner Harlan:

The complainant contends that the rail-and-lake rates to Duluth, Minn., from points east of the Indiana-Illinois State line are unreasonably high in themselves and are unjustly dis-

criminatory in their relation to the rates from the same territory to Chicago. Also that the present rates on through rail-and-lake traffic to Duluth from trunk line territory are unreasonable and unjustly discriminatory as compared with rates from the same territory to Chicago. The commission decided that the present scale of rail-and-lake class rates to Duluth from Trunk Line and Central Freight Association territories was excessive and prescribed reasonable rates for the future; also that any scale of rail-and-lake rates to Duluth in excess of the rail-and-lake rates to Chicago from trunk line territory is unjustly discriminatory against Duluth. The carriers were ordered to remove this discrimination. The class rates to Duluth from all points east of the Indiana-Illinois state line were also found to be unreasonable and the carriers were ordered to reduce them so that they would bear about the same relation to the rates from New York, just prescribed for the future, as the present rates from those points bear to the present rates from New York to Duluth.

The spread between the Duluth rates and the Twin City rates is on a 15-cent scale. The commission found that there was an undue discrimination against Duluth in this narrow spread between its through rates on traffic from the east and its through rates to the Twin Cities on similar traffic. To remove this discrimination the commission prescribed for the future lower rates on through traffic to Duluth. The complainants contend that the tariff rates on rail-and-lake traffic to the northwest ought to break on its wharves instead of at the Twin Cities and that, in fairness to Duluth, the sum of the intermediate rates is the lowest rate adjustment that Minneapolis and St. Paul should have. The commission found that there was no good reason for requiring the carriers to break the rate on the Duluth wharves. Duluth cannot ask for anything more than reasonable rates and a reasonable relation of rates as between itself and the Twin Cities. To have rates break at a particular point is not an inherent rate right. And inasmuch as the rates to the northwest under the present adjustment break on the Twin Cities and not on Duluth, neither the through rates to the Twin Cities nor the general rate structure to the northwest will be disturbed by a readjustment of the factors on which the Twin City rates are based. In this manner Duluth may be given a more ample recognition of its natural advantages of location at the head of the lake. This it is clearly entitled to have. The commission found also that undue rate discrimination against towns in the vicinity of the Twin Cities, fourth section violations, and evasions and manipulations growing from the loose policing of transit privileges at Duluth existed. Although no order was entered in regard to those practices the carriers will be expected to submit revised tariffs by October 1, 1913, removing the discriminations. (27 I. C. C. 639.)

COURT NEWS.

The Chicago, Rock Island & Pacific and Chicago Great Western, in behalf of all of the roads operating in Iowa, have filed a petition with the federal district court at Des Moines, asking an injunction to prevent the state railroad commission from enforcing the new law prescribing a passenger rate of 1½ cents per mile for state fairs and other meetings at which the attendance is 75,000 or over.

Judge Cushman, in the United States district court at Seattle, in a proceeding brought by Mary A. Meese against the Northern Pacific for $75,000 for the death of her husband, has held that since the widow collected $4,000 under the provisions of the state for a workingman's compensation fund, she is not entitled to any damages from the railroad or from the company which employed Meese. Meese was employed by a brewery and was killed while working on a spur track of the Northern Pacific to the brewery.

The attorney-general of Mississippi on July 22 filed a suit in the chancery court at Clarksville, Miss., against the Illinois Central and the Yazoo & Mississippi Valley railroads, alleging an illegal merger under the anti-trust laws and asking penalties approximating $50,000,000. The bill asks for a dissolution of the merger, forfeiture of the charter of the Y. & M. V., ousting of the Illinois Central from the state, sale of the Y. & M. V. securities held by the I. C., and the appointment of separate receivers for the two roads.

Railway Officers.

Executive, Financial and Legal Officers.

B. S. Barker has been appointed vice-president and general manager of the Gainesville & Northwestern, with headquarters at Gainesville, Ga.

T. S. Ford has been appointed auditor of the San Antonio, Uvalde & Gulf, with headquarters at San Antonio, Tex., succeeding G. H. Winsor, who retains the position of general freight and passenger agent.

Charles S. Mellen, who recently resigned the presidency of the Boston & Maine and the Maine Central, has resigned also as president of the New York, New Haven & Hartford and subsidiary lines, to become effective on the election of his successor.

C. W. Jones, vice-president and general manager of the Chicago, Rock Island & Gulf, has been elected president and general manager, with headquarters at El Reno, Okla. H. U. Mudge, whom Mr. Jones succeeds as president, has been elected chairman of the board of directors.

L. H. Long, assistant general manager of the Southern Pacific of Mexico, and the Arizona Eastern at Tucson, Ariz., has been appointed a vice-president of both these roads, and J. C. McClure, assistant general manager at Tucson, has been appointed assistant to president of both roads, with headquarters at Tucson.

The jurisdiction of Alexander Robertson, assistant to the president of the Missouri Pacific and the St. Louis, Iron Mountain & Southern, and of J. M. Johnson, vice-president in charge of traffic of those roads, has been extended over the Western Pacific and the Denver & Rio Grande, with headquarters at St. Louis, Mo.

John Quincy Van Winkle, whose appointment as assistant to Vice-president J. J. Bernet, of the Cleveland, Cincinnati, Chicago & St. Louis, has already been announced in these columns, was born January 16, 1851, in Madison county, Ind. He was educated in the common schools at Anderson, Ind., and began railway work in 1861 with the Indianapolis, Pittsburgh & Cleveland (now a part of the Big Four) as messenger and general utility boy at Anderson, Ind. From 1865 to 1867 he was news agent on the road, and then until July, 1873, was clerk in the station at Anderson. The following five months he was agent at Pendleton, Ind., and from December, 1873, to 1877, was chief clerk in the superintendent's office. From the latter date to November, 1881, he was successively agent at Union City, Ind., general yardmaster at Indianapolis, Ind., and agent at Mattoon, Ill. He was then made trainmaster at Indianapolis; from December, 1882, to January, 1884, was agent at East St. Louis, Ill., and from January, 1884, to September, 1888, agent and division freight agent at Indianapolis. He was then from September, 1888, to January, 1892, superintendent. Mr. Van Winkle's service up to this time had been with the Cleveland, Columbus & Cincinnati, and its successor, the Cleveland, Cincinnati, Chicago & St. Louis, which road he left to become general superintendent of the Terminal Railroad Association of St. Louis. He returned to the Big Four in March, 1893, as general superintendent, and on May 1, 1906, was made assistant general manager. He was promoted to general manager of that road, the Peoria & Eastern and the Cincinnati

J. Q. Van Winkle.

Northern, on October 1, 1906, which position he held at the time of his recent appointment as assistant to the vice-president, with headquarters at Cincinnati, Ohio, as above noted.

Arthur P. Foss, whose appointment as comptroller of the Maine Central, with headquarters at Portland, Maine, has been announced in these columns, was born on March 25, 1869, at Abbot, Maine, and was educated at Monson Academy, Monson, and at Maine Central Institute, Pittsfield. He began railway work in July, 1887, with the Maine Central, and has been in the continuous service of that road ever since. From October of the same year to March, 1892, he was freight clerk at Augusta, and then to October, 1899, was traveling auditor. He was appointed chief clerk in the accounting department on October 1, 1899, and in July, 1907, was made auditor of disbursements, remaining in that position until November, 1911, when he was promoted to assistant comptroller, which position he held at the time of his recent appointment as comptroller of the same road, as above noted.

Operating Officers.

C. J. Field has been appointed general manager of the Orangeburg Railway, in charge of operation and traffic, with headquarters at Orangeburg, S. C.

D. Van Hecke, trainmaster of the Rock Island lines at Haileyville, Okla., has been transferred to the Oklahoma division in a similar capacity, with headquarters at El Reno, Okla.

E. M. Costin, division superintendent of the Cleveland, Cincinnati, Chicago & St. Louis, at Cleveland, Ohio, has been appointed assistant general superintendent, with headquarters at Indianapolis, Ind.

S. W. Gibson, formerly superintendent of the Northern Illinois & Southern Wisconsin division of the Wells, Fargo & Company, and A. G. Eddy, heretofore superintendent of the Iowa division, have been appointed efficiency superintendents, with headquarters at Chicago, and will report to E. A. Stedman, vice-president and general manager.

D'Alton C. Coleman, general superintendent of the Manitoba division of the Canadian Pacific at Winnipeg, Man., has been appointed general superintendent of the Alberta division, succeeding A. Price, transferred, and C. Murphy, general superintendent of transportation at Montreal, has been appointed general superintendent of the Manitoba division, succeeding Mr. Coleman.

F. B. Sanford, chief despatcher of the Missouri, Kansas & Texas, has been appointed trainmaster of the Cherokee division, succeeding F. P. Stocker, who has been transferred to the Choctaw division as trainmaster, both with headquarters at Muskogee, Okla. R. R. Farmer, trainmaster of the Choctaw division, has been transferred to the St. Louis division as trainmaster, with headquarters at Sedalia, Mo.

Timothy H. Sullivan has been appointed superintendent of the Iowa division of the Illinois Central, with office at Ft. Dodge, Iowa, succeeding Lawrence A. Downs, transferred. George E. Patterson succeeds Mr. Sullivan as superintendent of the Springfield division, with headquarters at Clinton, Ill. Joseph W. Hevron is appointed trainmaster of the Chicago, Bloomington, Pontiac and Tracy districts, and Gilman Line, with office at Kankakee, Ill., in place of Mr. Patterson. Effective July 15.

C. O. Jenks, general superintendent of the Central District of the Great Northern, with office at Great Falls, Mont., has been appointed general superintendent of the Lake district, with headquarters at Superior, Wis., succeeding J. H. Taylor, deceased. Mr. Jenks is succeeded by F. S. Elliott, heretofore assistant general superintendent of the Western district. J. H. O'Neill takes the place of Mr. Elliott at Spokane, Wash. M. Nicholson is appointed assistant general superintendent of the Central district, with headquarters at Great Falls, Mont. W. R. Smith, superintendent of the Kalispell division, with office at Whitefish, Mont., is appointed superintendent of the Cascade division, with headquarters at Everett, Wash., succeeding J. H. O'Neill. John C. Sesser, assistant engineer maintenance of way at St. Paul, Minn., succeeds Mr. Smith as superintendent of the Kalispell division. J. Lindsay, superintendent of the Sioux City division, is appointed superintendent of the Fergus Falls division, with headquarters at Melrose, Minn., in place of M. Nicholson. G. E. Votaw, trainmaster at Spokane, Wash., succeeds Mr. Lindsay as superintendent of the Sioux City division, with office at Sioux City, Iowa. Effective July 20.

John C. Sesser, who has been appointed superintendent of the Kalispell division of the Great Northern, with headquarters at Whitefish, Mont., was born on August 20, 1873, at St. Joseph, Mich. He was educated at Michigan State College, and at Lehigh University, receiving the degree of civil engineer. From June, 1896, to February of the following year he was draftsman with the Allentown Rolling Mill Company, Allentown, Pa., and then entered railway service. He was consecutively instrument man and resident engineer on the Chicago & North Western until April, 1898, and then to December of the following year was resident engineer of the Union Pacific. In November, 1900, he became chief engineer of the Olaa Plantation, Olaa, Hawaii. From June, 1901, to November of the following year he was resident engineer of the Chicago, Milwaukee & St. Paul, and then, to May, 1903, was chief engineer of the Iowa & St. Louis. He was resident engineer and engineer of maintenance of way of the Missouri district of the Chicago, Burlington & Quincy from May, 1903, to April, 1907, and then to December, 1909, was vice-president of W. K. Kenly & Co., and contracting engineer of the Walsh Construction Company. In December, 1909, he was appointed assistant engineer maintenance of way of the Great Northern, at St. Paul, Minn., which position he held at the time of his recent appointment as superintendent of the Kalispell division of the same road, as above noted.

J. C. Sesser.

Traffic Officers.

M. F. Hogan has been appointed assistant commercial agent of the Chicago, Milwaukee & St. Paul at Davenport, Ia.

R. S. Trumbull has been appointed agricultural agent of the El Paso & Southwestern System and the Morenci Southern, with headquarters at El Paso, Texas.

W. W. Croxton, general passenger agent of the Norfolk Southern, at Norfolk, Va., has been appointed general passenger agent of the Atlanta, Birmingham & Atlantic, with headquarters at Atlanta, Ga., succeeding W. H. Leahy.

A. C. Kessell has been appointed freight and ticket agent of the Pennsylvania Lines at Dresden, Ohio, in place of M. F. Ater, transferred. J. E. Kessell has been appointed freight and ticket agent at South Zanesville, Ohio, succeeding A. C. Kessell.

H. S. Leard, division passenger agent of the Seaboard Air Line, at Raleigh, N. C., has been appointed general passenger agent of the Norfolk Southern, with headquarters at Norfolk, Va., succeeding W. W. Croxton, resigned to go to another company.

Harry F. Voss has been appointed traveling freight agent of the Cincinnati, New Orleans & Texas Pacific and John P. O'Gallagher has been appointed soliciting freight agent, both with headquarters at Atlanta, Ga. L. F. Malum has been appointed soliciting freight agent with headquarters at Jacksonville, Fla.

H. A. Howe has been appointed commercial agent of the Illinois Central, with office at Buffalo, N. Y., succeeding H. P. Hewes, resigned to accept service with another company, and J. E. Whitney has been appointed contracting freight agent, with office at New York, succeeding S. E. Frank, promoted.

Charles Beverley Foster, whose appointment as assistant passenger traffic manager, Eastern Lines of the Canadian Pacific, with headquarters at Montreal, Que., has been announced in these columns, was born on September 30, 1871, at Kingston, Kings county, New Brunswick, and was educated in the public schools. He entered the service of the Canadian Pacific on April 1, 1891, as a stenographer in the passenger department at St. John, and has been in the continuous service of that road ever since. In September, 1893, he was appointed traveling passenger agent, and in August, 1899, became chief clerk in the passenger department, remaining in that position until February, 1902, when he was appointed district passenger agent at St. John. He was transferred in the same capacity in November, 1904, to Toronto, Ont., and in September, 1908, became assistant general passenger agent at Vancouver, B. C. On November 1, 1910, he was made general passenger agent at Winnipeg, Man., which position he held at the time of his appointment on July 1, 1913, as assistant passenger traffic manager, Eastern Lines, of the same road, with headquarters at Montreal, as above noted.

Carlos A. Hayes, whose appointment as general traffic manager of the Intercolonial and the Prince Edward Island railways, with headquarters at Moncton, N. B., has been announced in these columns, was born on March 10, 1865, at West Springfield, Mass., and was educated at Amherst College. He began railroad work in 1882, as a clerk in the freight accounting department of the Connecticut River Railroad. In November, 1884, he was appointed chief clerk in the freight accounting department and later was chief clerk in the general freight office of the Boston & Lowell, and the successor of both these roads, the Boston & Maine. He was general freight and passenger agent of the Central New England & Western, now a part of the Central New England, from November, 1890, to June, 1892, and then, to the following October, was division freight agent of the Philadelphia & Reading. From October, 1892, to June, 1896, he was the New England agent of the National Despatch Freight Line; then for about three years, was New England agent and acting general manager, and in July, 1899, was made manager of the same line. From April, 1902, to May of the following year he was manager of the National Despatch Great Eastern Line, and in May, 1903, was appointed assistant general freight agent of the Grand Trunk, remaining in that position until 1908, when he became general freight agent of the same road. On October 16, 1911, he was promoted to freight traffic manager of the Grand Trunk, which position he held at the time of his recent appointment as general traffic manager of the Intercolonial and the Prince Edward Island railways, as above noted.

Engineering and Rolling Stock Officers.

Clarence Curtis Blood has been appointed roadmaster of the Puget Sound division of the Northern Pacific at Seattle, Wash.

R. A. Cook, engineer track elevation of the Chicago & Alton, at Joliet, Ill., has been appointed valuation engineer of that road, with headquarters at Chicago.

M. W. Jones, trainmaster of the Guayaquil & Quito, has been appointed also superintendent of telegraph and telephone, with headquarters at Huigra, succeeding A. R. Morris resigned.

G. B. Owen, engineer maintenance of way of the Erie at Jersey City, N. J., having been granted six months' leave of absence, the duties of that position were taken over by the general manager's office on July 1.

W. N. Mitchell, for eight years the head of the railway department of the International Correspondence Schools at Chicago, has been appointed fuel supervisor of the Chicago Great Western, with office at Chicago.

James Edward Johnson, whose appointment as division engineer of the Pere Marquette, with office at Saginaw, Mich., has already been announced in these columns, was born August 24, 1883, at Tipton, Ind. He was educated at the Ohio State University, and began railway work February 1, 1905, with the Cincinnati, Hamilton & Dayton as rodman. From May 1 to September 1 of that year he was rodman and instrumentman on the Lake Shore & Michigan Southern, and then until January 15, 1906, he was with the Cleveland, Cincinnati, Chicago & St. Louis as masonry inspector and transitman. The following eight months he was with the Vandalia as engineer of corps, and on September 1, 1906, he became assistant engineer of the Missouri Pacific and St. Louis, Iron Mountain & Southern. From February, 1907, to September 15, 1912, Mr. Johnson was division engineer of the Pere Marquette, resigning to become assistant eastern sales agent of the P. & M. Company at Chicago. He now returns to the Pere Marquette as division engineer, as above noted.

R. Q. Prendergast, who has been appointed mechanical superintendent of the Bangor & Aroostook, with headquarters at Milo Junction, Maine, as has been announced in these columns, was educated in the high schools and at a business college. After serving his apprenticeship as machinist on the Baltimore & Ohio, at Benwood, W. Va., he was promoted to division foreman at Cameron, and then for a numer of years was general foreman at most of the large shops of the same road, including the Mount Claire shop. He then went to the Cumberland Valley as general foreman at Chambersburg, Pa., and three years later was appointed general foreman of the Delaware & Hudson at Carbondale, Pa. He remained in that position for two years, and then for five years was division master mechanic on the Denver & Rio Grande at Pueblo, Colo. He left that road to go to the Cincinnati, Hamilton & Dayton as division master mechanic at Indianapolis, Ind., where he remained for one year, leaving that position to become mechanical superintendent of the Bangor & Aroostook, as above noted.

R. Q. Prendergast.

Purchasing Officers.

H. C. Pearce, general storekeeper of the Southern Pacific at San Francisco, Cal., has been appointed to the new position of general purchasing agent of the Seaboard Air Line, with headquarters at Norfolk, Va., in charge of both purchases and stores.

H. G. Cook has been appointed general storekeeper of the Southern Pacific, with headquarters at San Francisco, Cal., to succeed H. C. Pearce, resigned to accept position with another company; effective July 15.

A. A. Goodchild, auditor stores and mechanical accounts of the Canadian Pacific at Montreal, Que., has been appointed general storekeeper for lines east of Fort William, Ont., with office at Montreal, succeeding M. J. Power, deceased.

OBITUARY.

Gordon A. Aird, general agent of the freight department of the Atchison, Topeka & Santa Fe, died at his home in Chicago on July 15.

J. H. Taylor, general superintendent of the Lake district of the Great Northern, with headquarters at Superior, Wis., died at his residence in Duluth, Minn., on July 14, aged 51 years. Mr. Taylor began railway work in 1879 with the New York, Lake Erie & Western, with which road he remained until May, 1886, as clerk and operator at various stations. He was then until June 15, 1902, with the Erie & Wyoming Valley as train despatcher, chief despatcher and trainmaster. From the latter date to November, 1904, Mr. Taylor was connected with the Erie as division operator of the Erie division and division superintendent at Bradford, Pa., and Port Jervis, N. Y. He left the Erie to go to the Great Northern as superintendent of the Mesabe & Superior division at Superior, Wis. In September, 1909, he was promoted to general superintendent of the Central district, and in March, 1912, he was made general superintendent of the Lake district.

Equipment and Supplies.

LOCOMOTIVE BUILDING.

The Midland Valley has ordered 2 consolidation locomotives from the Baldwin Locomotive Works.

The Central of Georgia has ordered 4 Pacific type locomotives from the Baldwin Locomotive Works.

The Live Oak, Perry & Gulf has ordered 1 ten-wheel locomotive from the Baldwin Locomotive Works.

The Coal & Coke Railway has ordered 2 consolidation locomotives from the Baldwin Locomotive Works.

The Ingram-Day Lumber Company has ordered 1 ten-wheel locomotive from the Baldwin Locomotive Works.

The Boston & Albany has ordered 4 six-wheel switching locomotives from the American Locomotive Company. These locomotives will be equipped with superheaters, will have 21 in. x 28 in. cylinders, 57 in. driving wheels, and in working order will weigh 170,000 lbs.

The Delaware, Lackawanna & Western has ordered 1 four-wheel switching locomotive from the American Locomotive Company. The dimensions of the cylinders will be 16 in. x 24 in.; the diameter of the driving wheels will be 46 in., and the total weight in working order will be 89,000 lbs.

CAR BUILDING.

The Southern Railway is in the market for 1,500 freight cars.

The Seaboard Air Line has ordered 10 coaches from the Pressed Steel Car Company.

The Pennsylvania Equipment Company, Philadelphia, Pa., is in the market for 1 second-hand combination passenger and baggage car.

The El Paso & Southwestern is making inquiries for 3 steel coaches, 2 dining cars, 2 combination baggage and express cars and 1 combination baggage and mail car.

The New York, New Haven & Hartford is said to be in the market for 100 coaches, 50 smoking cars, 10 combination baggage and mail cars and 10 combination baggage and smoking cars.

IRON AND STEEL.

The Chicago & Eastern Illinois has ordered 12,000 tons of rails from the Illinois Steel Company.

General Conditions in Steel.—Manufacturers report that while there has been no perceptible increase in buying during the past week, more inquiries are coming in from consumers. It is estimated that incoming business, including the United States Steel Corporation as well as the independent companies, is at the rate of about 50 per cent. of shipments. This new business, with the old orders on the books, is keeping the mills operating slightly above 90 per cent. of maximum capacity. New orders are mostly for deliveries in the near future, which helps to sustain mill activity.

New Port Railway in Uruguay.—The Montevideo Port railway, inaugurated on May 16, runs from the main station of the Central Uruguay Railway around the port to the docks where the steamers tie up. The road is only a few miles long, but by establishing direct communication between the sea and land carriers, it represents a commercial link of the utmost importance. The docks are provided with traveling electric cranes of high power, and now that steamers are berthed at the docks and railway cars may be run to the water's edge alongside the steamers, the transshipment of cargo from railway car to steamer and vice versa may be effected without loss of time and at a minimum of cost.

Supply Trade News.

The Roberts & Schaefer Company, Chicago, has received a contract from the Virginian Railway for a large 400-ton capacity, reinforced concrete, counterbalanced bucket (Holmen type) locomotive coaling station to be built immediately at Elmore, W. Va. The approximate contract price is $30,000.

Edwin R. Rockwell, formerly president of the Guarantee Electric Company, Chicago, announces the formation of the Rockwell Electric Company, with office in the First National Bank building, Chicago. The firm will handle electrical machinery, and offers its services for electrical engineering in all branches.

The Southern California Edison Company has received permission from the California railroad commission to issue $2,500,000 5 per cent. first mortgage bonds. Instead of selling these bonds now the company will pledge a portion of them as collateral for money which will be borrowed until the bonds can be sold on more favorable terms.

The Titan Copper Products Company, Inc., Buffalo, N. Y., maker of brass, bronze and aluminum castings, has been organized by Charles V. Slocum, who for the past six years has been engaged in introducing titanium to the steel and iron trade. The officers of the company are as follows: President, Charles V. Slocum; vice-president, A. N. Slocum; treasurer, W. W. Slocum, and general superintendent, Frank P. Lund.

L. C. Noble, vice-president of the Pittsburgh Spring & Steel Company, Pittsburgh, Pa., with office in Chicago, died at his home in Evanston, Ill., on July 19, after a brief illness. Mr. Noble was superintendent of motive power of the Houston & Texas Central for a number of years prior to 1890. In that year he became associated with the A. French Spring Company as western manager of sales. In 1902 he resigned that position to become vice-president of the Pittsburgh Spring & Steel Company.

TRADE PUBLICATIONS.

Automatic Voltage Regulators.—The General Electric Company, Schenectady, N. Y., has issued bulletin No. A4123, describing its automatic voltage regulators for the regulation of generator voltage. These regulators are made for use with both alternating and direct current. This bulletin supersedes the company's previous bulletin on this subject.

Bolt Cutters.—The National Machinery Company, Tiffin, Ohio, has published an illustrated booklet entitled Perfect Threads, describing its demonstrations of cutting threads on National bolt cutters which took place at the recent conventions of the American Railway Master Mechanics' Association and the Master Car Builders' Association at Atlantic City, N. J.

Waterproofing.—The Ceresit Waterproofing Company, Chicago, has issued an especially attractive booklet describing the use of Ceresit waterproofing paste for concrete work and many examples of structures on which it has been used. The booklet takes up the subject of waterproofing in detail, its origin, its uses and its advantages, giving a scientific explanation of the action of Ceresit, detailed reports of technical tests of its reliability and permanence, and a large number of specific records of its use, together with complete specifications.

Baldwin Locomotives.—Three bulletins of locomotive construction have been received from the Baldwin Locomotive Works, Philadelphia, Pa. Record No. 73, entitled "Recent Development of the Locomotive," contains a paper by George R. Henderson, consulting engineer of the Baldwin Locomotive Works, which was presented before the Franklin Institute last year. It covers the important developments in steam locomotive practice as well as an extensive chapter on electric propulsion. Record No. 74 covers the general and detailed construction of the gasolene industrial locomotives patented by A. H. Ehle, and manufactured by the Baldwin Locomotive Works. Record No. 75 is devoted to a consideration of the mikado type locomotive and opens with a discussion of the possibilities of that type for different classes of service. Following this, 17 typical locomotives of this type, which have been furnished to as many different roads, are illustrated and described.

Railway Construction.

APPALACHIAN ELECTRIC POWER & TRANSIT COMPANY.—This company has been incorporated in North Carolina, it is said, to build from Wilkesboro, N. C., south to Taylorsville, about 20 miles. T. B. Finley, president, Wilkesboro.

CHEYENNE SHORT LINE.—An officer writes that a contract has been given to Levy & Levy, Muskogee, Okla., to build from Strong City, Okla., on the Clinton & Oklahoma Western, south to Cheyenne, seven miles, and that the company expects to have the work finished soon. The plans call for building a total of 70 miles. R. G. Alexander, president and chief engineer, Norman, Okla.

CUMBERLAND VALLEY INTERURBAN.—This company has applied for a charter in Tennessee to build from Nashville southeast via DeKalb county to Sparta, about 80 miles. J. H. Cartwright, W. G. Beard, J. W. Jenkins and H. Hancock are interested.

DALLAS NORTHWESTERN TRACTION.—See Dallas Southwestern Traction.

DALLAS SOUTHWESTERN TRACTION.—Organized in Texas with $500,000 capital and office at Dallas, to build from Dallas southwest via Cleburne to Glen Rose, 80 miles, with a branch line from Eagle Ford north to Irvin, 10 miles. The same interests are organizing the Dallas Northwestern Traction to build from Dallas northwest via Denton to Krum, 46 miles. The surveys for both these lines have been made, and it is announced that financial arrangements for their construction are completed. The incorporators include E. P. Turner, B. B. Cain, J. T. Witt, J. J. Carter, C. A. Dunn, G. G. Taylor and L. F. Sheppard, Dallas; W. B. McKnight, Mansfield; W. Poindexter and D. Strickland, Cleburne; J. C. Smythe and J. P. Fielder, Venus; B. M. Sansom and W. C. Glasgow, Alvarado.

GUADALUPE VALLEY TRACTION.—This company has finished surveys, it is said, for the line from Austin, Tex., south to Lockhart, thence southwest via Sequin to San Antonio, about 100 miles, and grading work is now under way out of Austin. W. D. Dunlop, Beaumont, and J. M. Abbott, Jr., Sequin, are directors. (June 13, p. 1324.)

GULF, FREEPORT & NORTHERN.—Announcement is made that the preliminary survey for this new line has been completed between West Columbia, Tex., and Beasley, and the survey between West Columbia and Freeport is to be started in a few days. The plans call for building from Freeport northwest to Sealy, about 80 miles. The company expects to start grading work on August 15. The route to Sealy, the proposed northern terminus from West Columbia, has not yet been fully determined. C. E. Clark, treasurer, Freeport. (July 4, p. 36.)

HASTINGS & NORTHWESTERN.—See Union Pacific.

KINGSTON & EXCELSIOR SPRINGS (Electric).—Preliminary surveys are being made, it is said, for a line to be built from Kingston, Mo., south via Lawson to Excelsior Springs, about 25 miles. B. Boner, president, Kingston.

MEXICAN ROADS.—Announcement has been made that the Compagnie des Chemins de Fer Secondaires of Brussels, Belgium, recently entered into a contract with the Mexican government for the construction of 3,105 miles of railroad, and the company expects to have the surveys for the lines well enough advanced to start grading work by September 1 at several widely separated points. The new lines are to become a part of the National Railways of Mexico on completion. One of the most important of the new lines is to parallel the United States border, traversing the states of Coahuila, Chihuahua and part of Sonora. Another line is to be built from Balsas southeast through the state of Guerrero to the port of Acapulco on the Pacific coast, and a third line from Llano Grande to Mazatlan, crossing the Sierra Madre range.

MINNESOTA & INTERNATIONAL.—An officer writes that a contract has been given to A. Guthrie & Co., St. Paul, Minn., to build the cut-off between Leaks, Minn., and Brainerd, 5.8 miles, to provide an improved entrance into Brainerd. (May 23, p. 1116.)

NATIONAL RAILWAYS OF MEXICO.—An officer writes under date of July 5, regarding work on the Vera Cruz-Tampico-Matamoros line with branch to Honey, for which a concession was granted to the company by the Mexican government in March, 1912, that the Vera Cruz-Tampico section is to be over 300 miles long, and will have 0.5 per cent. grades compensated, with maximum curvature of 3 deg., except on a section of about 20 miles over the mesa of Sanatepec, at a point about 140 miles south of Tampico, which will have an elevation of 1,300 ft. above sea level, the maximum grade will be 2 per cent. compensated, with maximum curvature of 6 deg. On top of this mesa the branch line to Honey and to Mexico City leaves the main line. Final location of this section has been completed, and the first 63 miles south of Tampico, including a 1,600-ft. bridge over the Panuco river, is under contract and the work is progressing rapidly. This section includes the petroleum districts of Mexico, also a timber and agricultural country only partially developed. The Tampico-Matamoros section will be about 255 miles long and will have maximum grades of 0.3 per cent. compensated with maximum curvature of 2 deg. Preliminary survey has been completed, the final location is now under way and is about 40 per cent. completed. The Honey branch will connect the Vera Cruz-Tampico-Matamoros line with the central mesa. The company already has a line from Honey to Mexico City. The new line will provide a short route to the port of Tampico, and will be about 75 miles long from Honey to a junction with the Tampico-Vera Cruz line. It will have maximum grades of 2 per cent. compensated and maximum curvature of 8 deg., and will run from an elevation of 1,300 ft. to an elevation of 7,200 ft. above sea level. The preliminary survey has been completed and final location is under way and about 20 per cent. completed. Of these lines about 275 miles will be laid with 85-lb. rail, and about 360 miles with 75-lb. rail. Native hardwood and American pine creosoted cross ties will be used. The work involves handling about 52 million cu. yds. of grading material; erecting about 25,000 tons of steel bridges; constructing about 416,000 cu. yds. of concrete masonry, and boring 22,960 lineal ft. of tunnel.

NEW YORK SUBWAYS.—The New York Public Service Commission, First district, has awarded the contract for the construction of the section from the end of the present construction, midway between Houston and Bleecker streets, to Fourteenth street and Union Square, of the Broadway subway in the borough of Manhattan, to the Dock Contractor Company, of Hoboken, N. J., and New York. This company's bid of $2,578,078 was the lowest bid submitted for the work. (July 11, p. 77.)

OHIO ROADS (Electric).—According to press reports, plans are being made to build a line to connect Cincinnati, Ohio, Reading, Carlisle, Germantown and Dayton. J. G. Miller, Middletown; F. J. Ferneding and O. L. Mead, Dayton, are said to be interested.

ORLEANS-KENNER (Electric).—Plans are being made, it is said, to start work on a line from New Orleans, La., west via Kenner to Hanson City, about 12 miles. A. S. Bowman, president, Wilcox, La.

PAWHUSKA & NORTHEASTERN.—An officer writes that contracts are to be let early in August to build a section of this line. The plans call for building from Pawhuska, Okla., northeast to Caney, Kan., also to build from Pawhuska southwest to Skedee, or west to Ponca City, in all about 85 miles. Grading has been finished on three miles. There will be three steel bridges varying in length from 60 ft. to 110 ft. each, and four trestles, also five station buildings. The company expects to develop a traffic in livestock, oil and gas well supplies, lumber and general merchandise. J. B. Tolson, president, and C. C. Godman, chief engineer, Pawhuska. (July 18, p. 132.)

PORTLAND & OREGON CITY (Electric).—Incorporated in Oregon with $200,000 capital, to build a 14-mile line from Portland, Ore., south to Oregon City. P. T. Fletcher, D. E. Fletcher and F. Venzermeer are interested.

SAN ANTONIO & AUSTIN INTERURBAN.—Surveys have been made for the line from San Antonio, Tex., northeast via New Braunfels, Hunter, San Marcos, Kyle, Buda and Manchaca to Austin, 77 miles. The company is securing the right of way and necessary franchises. Address W. B. Tuttle, San Antonio. (March 28, p. 779.)

SOUTHWESTERN TRACTION & POWER COMPANY.—An officer writes that work has been under way for some time on the line from Morgan City, La., northwest via Franklin, Baldwin, Jeanerette, New Iberia, St. Martinsville and Lafayette to Abbeville, in all about 80 miles. Track has been laid on 13 miles. The work is being carried out by the company's forces. A contract for a power plant has been let to W. H. Schott & Co., Chicago. Jules Godchaux, president, New Orleans, and W. S. Henning, New Iberia, is engineer in charge of construction.

SOUTHWESTERN TRACTION.—An officer of this company, which operates a line from Belton, Tex., northeast to Temple, writes that surveys are nearing completion for a line between Waco and Austin. The Belton-Temple line is to form part of the through line. A. M. Coffin, chief engineer, Temple.

TOBIQUE & CAMPBELLTON.—The Canadian government has voted a subsidy at the usual rate in place of the subsidy voted in 1910, for building a line from Plaster Rock, N. B., north along the Tobique river valley to Riley Brook, 28 miles. It is understood that the company is ready to begin the construction work. This line is to form an extension from Plaster Rock, of the Tobique Valley railway, which is operated by the Canadian Pacific.

TIMPSON & HENDERSON.—This road, now in operation from Timpson, Tex., northwest to Henderson, 34 miles, will probably be extended from Henderson west via Tyler to Kaufman, about 100 miles. Plans have been under way for some time to build the section from Henderson west to Tyler, about 35 miles.

UNION PACIFIC.—Announcement is made that work has been finished on the Hastings & Northwestern, from Hastings, Neb., northwest to Gibbon, 26 miles. The completion of this line provides a short route from Topeka, Kan., via Marysville and Hastings, Neb., to the main line in Nebraska at Gibbon. (September 13, p. 491.)

RAILWAY STRUCTURES.

GREENWOOD, S. C.—An officer of the Seaboard Air Line writes that a contract has been given to C. V. York, Raleigh, N. C., to build a one-story brick freight house, 41 ft. x 211 ft. at Greenwood. The cost of the new structure will be about $16,000.

LOVERING, ONT.—The Railway Commissioners of Canada have authorized the Canadian Pacific to build a bridge over North river, Muskoka subdivision, Ontario division; also to build a bridge on Hamilton subdivision, Ontario division.

TACOMA, WASH.—The Oregon-Washington Railroad & Navigation Company has announced that a new freight warehouse, team tracks, yards and bridge will be built at this point in the near future, although detailed plans have not yet been arranged.

YORK, ALA.—An officer of the Alabama, Tennessee & Northern writes that a steel and galvanized iron general repair shop 110 ft. x 165 ft. with concrete foundations, is being built at York. The Decatur Bridge Company has been given a contract for the superstructure, and the foundation work is being carried out by the railway company's forces.

CANTON-HANKOW RAILWAY, CHINA.—Work upon the southern section of the Canton-Hankow railway (Kwangtung-Yueh-Han railway) under the present management and ownership seems to be progressing much more favorably than has been expected in view of the upset condition of Chinese railway finances. A special train was run from Canton to Ying Tak, 190 miles, on May 10, 1913, officially opening the line to that station. Ying Tak is 3 miles from the main line. The station on the main line where connection is made with Ying Tak is 87 miles from Canton, making Ying Tak 190 miles. It was intended to have Ying Tak on the main line, but the local authorities would not allow the railway company to build a track sufficiently high to avoid being under water each year some 10 to 20 days. Accordingly the latter have constructed a line so that they will run by Yink Tak during high-water periods. For the protection of employees at Ying Tak station, they are constructing a two-story building of sufficient height so that the employees can live on the second floor and be protected from the floods.

Railway Financial News

ATCHISON, TOPEKA & SANTA FE.—It is understood that this company has acquired control of the St. Louis, Rocky Mountain & Pacific. The St. Louis, Rocky Mountain & Pacific runs from Des Moines, N. Mex., on the Colorado & Southern, to Ute Park, 94 miles, with branches into the Dawson coal fields.

BALTIMORE & OHIO.—White Weld & Company, New York, have bought from the railroad company and are offering to the public a new issue of $1,370,000 of the Baltimore & Ohio first mortgage 4 per cent. bonds of 1898-1948. The offering price to the public is 89, yielding 4⅝ per cent. on the investment. These bonds are a part of the authorized issue of $165,000,000 of which $79,978,750 are outstanding. These first mortgage bonds are a legal investment for savings banks in Massachusetts. They are a first lien either by direct mortgage or collateral trust of 575 miles of road, including 108 miles of the double track main line between Baltimore and Philadelphia and 346 miles of main line from Akron, Ohio, to Chicago.

KANSAS & SOUTHWESTERN.—See a note in regard to rates and assessments in General News.

NEW YORK, NEW HAVEN & HARTFORD.—Upon the announcement of the resignation of Mr. Mellen, commented on elsewhere, a committee consisting of Theodore N. Vail, chairman; J. P. Morgan, Samuel Rea, William Skinner, Edward Milligan and Robert W. Taft was appointed by the board of directors to consider and recommend a successor to Mr. Mellen.

The directors have authorized and have called a special meeting of the stockholders to approve an issue of $67,552,400 6 per cent. 20-year convertible debenture bonds, to be convertible at par into stock at the option of the holder between 1918 and 1928, and stockholders are to be asked to approve the necessary increase in capital stock to provide for such conversion. The plan is to offer the convertible debenture 6's to stockholders of the New Haven at par. The proceeds from the sale of these debentures will be used to provide for $40,000,000 notes maturing December 1, and $5,000,000 maturing February 1; the remainder to pay for electrification, new equipment, elimination of grade crossings, etc. At present the New York, New Haven & Hartford has outstanding $180,013,000 stock, on which 6 per cent. dividends are being paid, and about $132,000,000 debentures.

PENNSYLVANIA.—The Public Utilities Commission of New Jersey has refused to approve the lease by the Pennsylvania Railroad of the West Jersey & Seashore for 999 years. The grounds on which the refusal is based is that the West Jersey & Seashore will not give the commission any assurance that the 6 per cent. guaranteed dividend will not be used as a plea in any rate cases which may later develop.

ST. LOUIS, ROCKY MOUNTAIN & PACIFIC.—See Atchison, Topeka & Santa Fe.

SOUTHERN RAILWAY.—This company has sold $1,750,000 5 per cent. equipment trust notes, maturing semi-annually from February, 1914, to 1923. The notes were offered to the public at prices yielding from 5¾ per cent. to 6 per cent.

WABASH.—The Equitable Trust Company of New York has filed a petition with the Federal Court asking for permission to intervene in the foreclosure suit brought by the Central Trust Company as trustee for the $5,000,000 4½ per cent. notes. The Equitable Trust Company is trustee for the first and refunding mortgage bonds of the Wabash.

WEST JERSEY & SEASHORE.—See Pennsylvania.

AERIAL RAILWAY IN COLOMBIA.—By permission of the Colombian government, Thomas Miller, who held a concession from the government for constructing an aerial railway between Manizales, Pereira, or Neira, and the National Occidental Railway, has transferred his concession to the Dorada Railway, Ltd., of London. Six months' extension of time for putting the railway into service has also been granted.